ROYAL STATISTICAL SOCIETY
21 MAY 1900

REPORT

ON THE

HEALTH OF THE CITY

OF

BIRMINGHAM,

FOR THE YEAR 1899.

ALSO,

ON THE PROCEEDINGS TAKEN UNDER THE ACTS FOR THE

PREVENTION OF ADULTERATION

OF FOOD AND DRUGS,

BY

ALFRED HILL, M.D., F.R.S.E., F.I.C.,

Past-President of the Society of Medical Officers of Health;
Past-President of the Society of Public Analysts; Late Examiner in Public
Health to the University of Aberdeen; Fellow of the Sanitary
Institute; Fellow of the College of State Medicine; Fellow
of the Incorporated Society of Medical Officers
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MEDICAL OFFICER OF HEALTH AND ANALYST TO THE CITY.

PRINTED BY ORDER OF THE HEALTH COMMITTEE.

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Health Department,
The Council House,
Birmingham,
March 27th, 1900.

TO THE HEALTH COMMITTEE.

Mr. Chairman and Gentlemen,

In presenting my 27th Annual Report I wish to direct your attention to one or two special points which have received my consideration during the past year. Introductory Remarks.

In connection with the prevalence of disease, the two most unusual features are the excessive mortality from Diarrhœa in the summer and the outbreak of Typhoid Fever in the autumn. These two occurrences received full investigation at the time, and certain considerations arising out of them, and lessons to be learned from them, are, I think, well worthy of attention. Perhaps the two most important points are the reduction in the diarrhœal mortality following upon the systematic cleansing of the pan privies, and the proof afforded that Typhoid Fever spreads far more by immediate infection than is commonly supposed.

I have again endeavoured to show how close a relationship exists between the death-rate and the class of property in particular districts, because this is so important as showing the great need for raising the houses of the poor to a higher sanitary level.

I am pleased to be able to report a large amount of progress in the abolition of the midden privies, but regret that no widespread means have been found for the rapid removal of pan privies.

The work done by the recently appointed Women Health Visitors has been a striking success. It has resulted in a very marked and in many cases a permanent improvement in the homes of the poor. I hope that your Committee will in the near future appoint additional officers for this very effective work.

POPULATION.

Population.

The ordinary method of estimating the population is to assume that the rate of increase or decrease in the previous intercensal period has continued without any alteration since the last census was taken. Unfortunately this method is found to lead not infrequently to very grave discrepancies between the estimated and the actual population.

For instance in Birmingham the census of 1891 revealed an error of 40,000 in the estimated population, while in Liverpool I think the error was about 100,000.

In 1899 the population of Birmingham, estimated in the ordinary way, would be 514,956, but I am afraid this estimate is far from correct.

Through the kindness of the Overseers I have been supplied with the number of inhabited houses in the City, and if there are still 5·0 persons on an average in each house, the population must have been about 22,000 in excess of the estimate. If this should prove to be the case, the birth-rate given in my report will be about 1·4 per 1,000 too high, and the death-rate about ·8 per 1,000 too high.

The uncertainty as to the precise population makes me feel very strongly the need for a quinquennial census.

MARRIAGES.

Marriage-rate.

The number of marriages for the year was 5,337, equal to a rate of 20·8 per 1,000. This is practically identical with that of 1898, but much higher than the rates for 1892 to 1895.

	Marriage-rate per 1,000.
1892	17·9
1893	16·9
1894	17·3
1895	17·9
1896	20·0
1897	21·9
1898	20·9
1899	20·8

BIRTHS.

Birth-rate.

Calculated on the population as estimated by the ordinary method the birth-rate was 34·3, a higher figure than in any year since 1885.

According to the return published by the Registrar General, only six great towns had as high a birth-rate as Birmingham.

DEATHS.

Distribution of Deaths in Institutions.

At the beginning of the year an important alteration was effected in the preparation of my statistics, the object being to render it possible to show the mortality in wards and individual streets with more accuracy than had previously been attained. This alteration will make the statistics much more valuable.

A large proportion of the deaths in Birmingham—about one-sixth of the whole—takes place in hospitals and other public institutions. As the previous residences are not stated in the death registers in such cases, it was not possible, prior to 1899, to allot these deaths to the wards and streets to which they properly belonged. In calculating the death-rates of particular wards and streets, it was my custom to make what allowance seemed reasonable and necessary on account of this default, and to give the death-rates as approximate merely.

At the beginning of 1899, with the sanction of your Committee, and with the co-operation of the Registrars of the City, arrangements were made by which I am supplied, as far as possible, with the home address of every person who dies in a public institution in Birmingham, and also of every Birmingham resident who dies in Aston Workhouse, King's Norton Workhouse, or Rubery Hill Asylum.

I am now in a position, therefore, to correct the gross death-rate of the town by including almost all the deaths of Birmingham citizens who die in public institutions outside the City, and at the same time deducting the deaths of non-residents which take place in our hospitals. In this way, 325 were added, and 247 were deducted last year, and the death-rate obtained more nearly represents the exact mortality of the year than was possible under the old system.

I am also able to give much more accurate information as to the relative mortality in various parts of the town by distributing nearly all the deaths which have hitherto been classed as occurring in public institutions over the localities to which they belong. Thus more than 1,000 deaths were, during the past year, referred to the wards and streets in which the deceased persons had lived, instead of appearing under the heading "Institutions." This signifies that very large and important corrections have been made in the figures dealing with the mortality in wards and streets.

I would take this opportunity of thanking all who have helped to bring about this change, and of asking the officers of the various hospitals, workhouses, and asylums to do me the favour of giving every possible facility to the Registrars, in order that I may be supplied, in every case, with the home address of the deceased person.

Death-rate.

After making the correction referred to, and using the Registrar General's estimate of the population, the death-rate for the year stands at 20·5 per 1,000. If it had been calculated in the old way it would have been 20·8 per 1,000. The latter figure is ·5 in excess of the quinquennial average, the death-rates for the previous five years having been as follows :—

1894	18·2
1895	19·9
1896	20·4
1897	21·1
1898	19·5

Owing to the doubt which exists as to whether the estimate of the population is reliable, it is impossible to speak with certainty about the death-rate for the year. So far as can be gathered, however, the mortality was not so heavy as might have been expected, having regard to the extensive prevalence of diarrhœa and some other diseases.

Death-rates in great Towns.

According to the figures given in Table VI., which are abstracted from the Registrar General's Annual Summary, there were twenty-four great towns with lower death-rates than Birmingham, and eight with a higher mortality.

Variations in mortality.

The following statement indicates which causes of death were responsible for large increases or decreases in the mortality :—

	Deaths in 1899.	Average 1894-98.	Increase or Decrease.
Diarrhœa	831	608	+ 223
Enteritis	580	361	+ 219
Tubercular Diseases ...	1,078	941	+ 137
Influenza	150	68	+ 82
Old Age	535	457	+ 78
Nervous Diseases ...	1,013	937	+ 76
Bronchitis, Pneumonia, and Pleurisy ...	1,831	1,783	+ 48
Cancer	386	340	+ 46
Typhoid Fever	119	99	+ 20
Heart Disease	631	628	+ 3
Whooping Cough ...	168	252	– 84
Measles	196	271	– 75
Scarlet Fever	29	101	– 72
Debility and Wasting ..	614	642	– 28
Premature Birth ...	367	381	14

It is quite clear from this statement that the increase in the death-rate was principally due to the mortality from diarrhœa and enteritis. If these diseases had caused the average number of deaths only, the death-rate would have been ·9 per 1,000 lower than it proved to be. The very large mortality from various forms of tuberculosis is unsatisfactory, since it is beyond doubt that much, if not all of it, is preventable.

Influenza was unfortunately very prevalent in the spring, but was not accompanied by quite so large a mortality from bronchitis and pneumonia as usual.

Most of the zymotic diseases were unusually quiescent during the year, the two exceptions being typhoid fever and diarrhœa. Both these diseases are fully commented on in another part of this report.

Death-rates in wards.

Turning now from the causes of the mortality to its distribution over the various wards, I find that the ward death-rates were as follows:—

	Estimated Population.	Death-rate. per 1,000.
St. Mary's	16,000	29·7
St. Bartholomew's	27,000	27·1
St. Stephen's	24,400	25·6
Deritend	26,700	23·1
St. George's	22,000	22·3
St. Thomas'	19,600	21·8
Nechells	35,000	21·7
St. Paul's	17,300	21·7
Duddeston	25,100	20·4
St. Martin's	25,600	19·6
Ladywood	26,700	18·6
Saltley	37,400	18·0
Rotton Park	45,100	16·8
Market Hall	12,600	16·4
All Saints'	43,700	16·1
Balsall Heath	41,600	16·0
Bordesley	55,400	14·6
Edgbaston and Harborne ...	32,100	13·0

The statement of the ward death-rates again shows the striking inequalities in healthiness in different parts of the town. These inequalities are due principally to differences in social and sanitary conditions.

Mortality in St. Bartholomew's Ward.

It must not be assumed, however, that the death-rate for any particular ward will necessarily apply to every portion of that ward. On the contrary, even in the most unhealthy wards there are districts which have a low mortality. This can be conveniently shown in the case of St. Bartholomew's Ward, which invariably has one of the highest death-rates in the City.

In St. Bartholomew's Ward there are 15 streets in which more than 50 per cent. of the houses are let at 3/6 per week or less. These streets are presumably the poorest in the ward. They contain a population of about 2,600, and last year they had a death-rate of 37·6 per 1,000, a terribly high figure.

There are 30 other streets in which the proportion of three and sixpenny houses varies from 25 to 50 per cent. Their population is about 11.500, and their death-rate last year was 32·7 per 1.000. This also is a high death-rate, but is much lower than that of the very poorest streets.

Going a step farther, it is found that there are 21 streets in which the proportion of "cheap" houses is from 0 to 25 per cent. Their population is about 7,600. and their death-rate 26·1, showing again a great reduction.

Lastly there are in St. Bartholomew's Ward 19 streets in which there are no three and sixpenny houses. In them the population is about 3,300, and their death-rate was 17·1, a very good figure. These healthy streets are for the most part comparatively new ones, lying in the most easterly part of the ward, and forming a district bounded by Garrison Street on the north, Coventry Road on the south, Watery Lane on the west, and the Midland Railway on the east.

It is clear that people can be healthily housed on St. Bartholomew's Ward, if the proper kind of provision is made for them. This is an important fact, as there is a large quantity of vacant land suitable for building in the very neighbourhood in which I have shown the death-rate to be quite low.

The figures just given for St. Bartholomew's Ward are all the more striking when arranged in the form of a table, as follows:—

Proportion of houses at 3/6 or less.	Death-rate per 1,000.
None	17·1
0 to 25 per cent.	26·1
25 ,, 50 ,, ...	32·7
Over 50	37·6

High death-rates and low-rented houses.

Proceeding further with the enquiry into the connection between low-rented houses and a high death-rate, I have divided all the streets in the City into five groups, according to the proportion of three and sixpenny houses in them, and have calculated the death-rate for each group. The results are as follows:—

Percentage of houses at 3/6 or less.	No. of Streets.	No. of Houses.	Estimated Population.	Deaths, 1899.	Death-rate per 1,000.
None	642	35,750	177,800	2,620	14·7
0 to 25	326	50.310	250,170	1,846	19·4
25 ,, 33	61	7,360	36,600	826	22·6
33 ,, 50	85	9,850	49,030	1.345	27·4
50 and over	72	3,960	19,700	602	30·6

These figures deal with large populations, and are, therefore, less liable to accidental error than those for a small area, such as a single street or even a single ward. They make it quite clear that the poorer the street, the higher, under existing conditions, is its death-rate.

In view of these facts it might be urged at first sight that poverty is *per se* the cause of the high mortality in the poorer streets, and that it is no part of a Sanitary Authority's duty to attempt to deal with this condition. To some extent this is true. But it is beyond all possibility of question that poverty is invariably associated with inferior sanitary conditions, and poverty, combined with bad sanitation, must certainly prove fatal to many who would be able to bear their poverty if they could live under good sanitary conditions.

Poverty and insanitary conditions.

The connection between poverty and insanitary conditions might be shown in many ways. Perhaps one example may suffice.

During 1899 the Health Visitors, going from house to house in the very poorest parts of the town, visited about 11,700 houses. As a consequence notice was given to the landlord to execute some sanitary work in 1,800 instances. Thus nearly one-sixth of the houses visited were not kept in a satisfactory state by the landlord. But the tenant as well as the landlord is often responsible for unhealthy conditions in the home, and in a still larger proportion of cases it was necessary to order the tenant to improve the state of the house.

It can, therefore, be demonstrated that the houses of the poor are not maintained in as healthy a state as they should be. They are also for the most part badly lighted and ventilated, and often provided with very unsatisfactory closet accommodation.

Thus poverty, inferior sanitary arrangements, and a heavy mortality are to be found associated. The Sanitary Authority cannot deal with the poverty itself, but it can improve the sanitary surroundings of the poor, thereby making them better able to bear their poverty, and therefore less subject to a high rate of mortality. If this is to be done the first requirement is an early knowledge of the sanitary defects existing, which can only be obtained by a large amount of continual systematic inspection. It then becomes imperative that such defects as are discovered be promptly and effectively remedied. Much has already been done in this direction, as may be seen from the returns relating to nuisances, but there is evidently room for a great deal more.

INFANT MORTALITY.

Infantile death-rate.

I regret to find that the infantile death-rate for the year was again unusually high, owing to the wide prevalence of diarrhœa during the hot weather. The figures for the last ten years have been as follows:—

	Deaths under 1 year per 1,000 births.
1890	181
1891	165
1892	166
1893	198
1894	164
1895	182
1896	197
1897	214
1898	190
1899	193

"*Goutte de lait.*"

During the year I made enquiry respecting a Society which has been at work in France for some time, termed "*Goutte de lait.*"

The object of the Society is to reduce the high mortality amongst infants by substituting a suitable for an unsuitable diet.

Its work is carried out in the following manner:—

(1) By encouraging mothers to nurse their infants at the breast.

(2) By furnishing specially-prepared milk, made to resemble human milk as nearly as possible, in cases where recourse to artificial food is absolutely unavoidable.

(3) By arranging for each infant to have the exact quantity of the prepared milk which it requires.

The work is chiefly intended to help the poorer classes in feeding their infants; and persons belonging to the poorest class can have the necessary quantity of milk for one infant on payment of one penny per day. Persons belonging to the artisan class are required to pay threepence per day, and those who belong to the middle and upper classes pay sixpence-halfpenny per day.

Each infant is supplied daily during a period of one year with sufficient milk for the day, divided up into the exact quantities required for each meal, taking into account its age and state of health.

Every week if possible, and every month at the very least, the infants are weighed to see that they are increasing in weight as they should do, and whether it is desirable to modify in any way the amount of their food.

Every day the milk used is examined to discover whether it is fresh, and whether it contains few or many micro-organisms, and is likely to be injurious to health or not. From time to time it is subjected to a chemical examination, and it is always sterilised before being delivered.

The expenses of the work are being defrayed by private subscriptions and donations, by payments by persons applying for milk, by grants from the public funds, and by interest on money invested.

The general work of the "*Goutte de lait*" Society is managed by a committee elected by the subscribers, and a Medical Director is appointed to take charge of the technical duties involved; also a committee of ladies to exercise their influence over the persons who are supplied with milk.

The success of the system is said to be very remarkable, enormous decreases in the infantile mortality being claimed not only at Havre but at several other places where it is in force. There can be no question whatever that an enormous number of infant lives are lost simply through bad feeding, and there seems little reason to doubt that such a work as is done by the "*Goutte de lait*" Society would, if carried out at all extensively, greatly reduce the amount of bad feeding and the consequent loss of life.

INFECTIOUS DISEASES.

Zymotic death-rate.

The zymotic death-rate of the year was 2·9 per 1,000, which is a fairly good figure. Unfortunately the value of the zymotic death-rate is greatly vitiated by the fact that many deaths which a few years ago were attributed to diarrhœa, and were, therefore, included in the zymotic mortality, are now described as due to gastro-enteritis, or muco-enteritis, and are now so classified.

Deaths from zymotic diseases.

The statement below shows the mortality from the seven principal zymotic diseases, and also from enteritis:—

	Deaths in 1899.	Average 1894-1898.	Increase or Decrease.
Smallpox	0	37	− 37
Measles	196	271	− 75
Scarlet Fever	29	101	− 72
Diphtheria and Croup ...	147	178	− 31
Whooping Cough ...	168	252	− 84
Typhoid Fever	119	99	+ 20
Diarrhœa...	831	608	+223
Enteritis	580	361	+219

Very gratifying decreases are shown except in typhoid fever, diarrhœa, and enteritis, the two latter having a very excessive mortality.

SMALLPOX.

Smallpox.

The City was entirely free from smallpox during the year, this being the third year of complete immunity from the disease. Smallpox tends to become epidemic every ten years, and there is usually a considerable period of quiescence between the epidemics. But there has never before been complete immunity in this City for more than one year, and the present extended freedom from the disease shows that the preventive measures adopted throughout the country, such as isolation, vaccination, and disinfection, are proving very beneficial.

VACCINATION.

Vaccination.

I have received returns from the Vaccination Officers, which show that in the year ending June 30th, 1899, the births of 18,138 children were reported to them. Of these, 2,540 died before being vaccinated.

Of the 15,598 surviving children, 11.956, or 76·7 per cent., had been vaccinated at the time the return was made. In only 96 instances during the year was "conscientious objection" made to vaccination. This is a very small number, being only about ·5 per cent. of the total number of children born.

About 10 per cent. of the surviving children appear to have escaped the vigilance of the Vaccination Officers, while 11 per cent. are still under notice.

MEASLES.

Measles.

The deaths from measles were much below the average number, although they amounted to 196, or nearly seven times as many as those from scarlet fever. The loss of life from measles is very largely due to want of care in nursing, the immediate cause of death being as a rule bronchitis or pneumonia, caused by a chill. It is significant that only one ward escaped without a single death from this disease last year, viz., Edgbaston and Harborne, where presumably the amount of attention given to the patients would be far greater than elsewhere.

I am still receiving from the School Board the addresses of children who are known to be suffering from Measles, and to each of these a handbill, stating the precautions necessary, has been sent. In this way it is hoped that attention will be called in a pointed and timely manner to the necessity of treating measles as a serious and dangerous complaint, which it undoubtedly is.

Great reduction in Scarlet Fever.

At one time scarlet fever was regarded almost as lightly as measles is to-day. Very little effort was made to isolate the sick, and no attempt at disinfection was made. In those days the death-rate from scarlet fever was very high, but since serious steps were taken to check its prevalence the death-rate has fallen enormously, as shown by the following figures for England and Wales, taken from the Registrar General's Annual Report:—

	Death-rate per million from Scarlet Fever.
5 years, 1861 to 1865	982·4
„ 1866 „ 1870	959·8
„ 1871 „ 1875	758·6
„ 1876 „ 1880	679·6
„ 1881 „ 1885	435·8
„ 1886 „ 1890	240·6
„ 1891 „ 1895	182·4

No reduction in Measles.

But, unfortunately, measles is still regarded as an unimportant disease. Little care is taken to separate the sick from the healthy, and little disinfection is practised. The result is that measles causes as high a mortality now as it did thirty years ago, instead of showing a great reduction like scarlet fever; for, as can be seen from the following figures, while the reduction in the death-rate from scarlet fever in the period referred to is over 80 per cent., in measles there is actually no improvement.

	Death-rate per million from Measles.
5 years, 1861 to 1865	456·6
„ 1866 „ 1870	428·4
„ 1871 „ 1875	373·2
„ 1876 „ 1880	384·8
„ 1881 „ 1885	413·0
„ 1886 „ 1890	468·4
„ 1891 „ 1895	407·8

I am afraid it is quite hopeless to expect any substantial reduction in the mortality from measles until far more stringent steps are taken to ensure isolation, greater care of the sick, and disinfection.

SCARLET FEVER.

Scarlet Fever.

Only 1,255 cases of scarlet fever were notified during the year. Previously the smallest number recorded had been 1,320 in 1898, and the next smallest 1,418 in 1892; so that 1899 stands conspicuous as the year of slightest prevalence. The deaths numbered only 29, which is also the smallest number on record.

During the registration year 1,052 cases were removed to the City Hospital, Lodge Road, being about 84 per cent. of the total number notified. I think there are strong grounds for believing that the large proportion of removals is one of the causes of the decreased prevalence of the disease and the marked reduction in its fatality.

DIPHTHERIA.

Diphtheria

I regret that the figures relating to Diphtheria and Membranous Croup are not so satisfactory as might be desired, as will be seen from the statement below :—

		Cases Notified.		Deaths Registered.
1892	...	533	...	102
1893	...	387	...	83
1894	...	406	...	91
1895	...	741	...	214
1896	...	1,194	...	293
1897	...	713	...	160
1898	...	689	...	132
1899	...	720	...	147

It will be seen that the decline in the prevalence and mortality from diphtheria has suffered a check, both the cases and deaths showing an increase upon those for 1898. Looking at the figures for 1892, 1893, and 1894 one cannot help feeling that the cases and deaths from diphtheria are still far more numerous than they should be, and that they are not decreasing nearly as rapidly as they might under a system of isolation in hospital.

Bacteriological examinations and anti-toxin serum.

During the year 269 specimens from the throats of 259 patients were bacteriologically examined on behalf of your Committee at Mason University College, and in 123 cases the diphtheria bacillus was found. In 108 of these cases anti-toxin serum was supplied.

In 10 instances anti-toxin was issued, although no diphtheria bacilli were discovered. It is, of course, quite possible that these were genuine cases of diphtheria, though the bacteriological examination failed to give confirmation.

In 94 other cases anti-toxin was issued without any examination being asked for, the medical practitioners feeling evidently quite sure of the nature of the illness, and therefore not requiring the confirmation afforded by a bacteriological examination.

It may be noted that though 720 cases of diphtheria and croup were notified, anti-toxin was officially issued in only 212. There seems to be no doubt that its use, if sufficiently early in the illness, is very beneficial, but the earliest possible use of it is absolutely essential to success. The reduction in the case mortality which followed the gratuitous distribution of anti-toxin serum, commenced in June, 1897, can be seen from the following figures:—

		Case Mortality from Diphtheria and Croup.
1893	... ...	21 per cent.
1894	... ...	22 ,,
1895	... ...	29 ,,
1896	... ...	25 ,,
1897	January to June	25 ,,
	June to December ...	20 ,,
1898	... ...	19 ,,
1899	... ...	20 ,,

During the year a circular was issued to the medical profession informing them that your Committee were willing to bear the cost not only of a primary examination to determine whether the case was undoubtedly one of diphtheria, but also of a secondary examination if desired by the medical attendant, to discover whether the throat had become free from the infective germs, and therefore whether the patient might be considered free from infection or not.

Diphtheria at Stratford Road Schools.

In the latter part of the second quarter a large number of cases of diphtheria were reported in children attending Stratford Road Board School, almost all of them being in the Infants' Department. There had been a number of cases at the school in February, March, and April, and the premises were then examined, but no defects could be found. From April 19th to May 19th no cases whatever were reported in scholars attending the school, but in the next four weeks there were as many as 18. Another inspection of the school premises was made, but without discovering anything to account for the prevalence of the disease. It seemed indeed that the outbreak could only be attributed to the attendance at school of children not supposed to be suffering from diphtheria, although in reality they had the complaint in a mild form, and also to the attendance, in the early stages of the disease, of children who ultimately were reported to me as suffering from it. This being the case, Dr. Simon, Medical Officer to the School Board, after conference with me, advised that the school should be closed for a fortnight, and this was done on June 30th. The school buildings were cleansed and purified, and reopened on July 17th, but were soon afterwards closed again, and remained closed until after the summer vacation.

The experience at Stratford Road, and at certain other schools, shows the great desirability of excluding from a school all children who have sore throats of any description, without waiting for a definite opinion that the disease is diphtheria. If this is done the spread of diphtheria through attendance at school appears to be very slight. In several cases in which it was not done last year a limited outbreak of the disease occurred.

At the time of the outbreak at Stratford Road School I received complaints of offensive emanations from the sewer near the school, and brought them to the notice of the City Surveyor, who had the sewer examined. It was found to be in an unsatisfactory state, having accumulations of sewage and sludge, possibly owing to it being out of gradient. In view of the prevalence of diphtheria I strongly urged that, in the interests of public health, the sewer should be re-constructed without delay. A similar recommendation was also made with respect to the Montgomery Street sewer at the time when diphtheria was prevalent in its neighbourhood.

Whooping Cough.

Whooping Cough.

This disease caused 168 deaths, which is 84 less than the quinquennial average. It is, however, far too large a mortality from a not very fatal disease.

Whooping Cough Handbill.

There appears to be great ignorance in many quarters of the dangerously infections character of whooping cough. In order to do something to dispel this ignorance I drew up the following handbill, and have had it sent to all houses in which I heard there was a case, either through the School Board or through our own officers :—

WHOOPING COUGH.

Whooping cough is very catching, and causes many deaths of babies and young children.

When a child has whooping cough keep it away from other children, to prevent the cough being caught by them.

Always take the spit from the child's mouth with a piece of clean paper or rag, and burn it at once.

Never let the child spit about the yard or street.

Keep all the children from school when one of them has whooping cough.

The child who is ill should be kept warm and quiet. Most of the deaths are caused by cold.

When the cough is better the house should be thoroughly cleansed. All the bed ticks, blankets, and sheets used by the child who has been ill, as well as its clothing, should be washed.

ALFRED HILL, M.D.,
Medical Officer of Health.

The Council House,
Birmingham.

If the above precautions were generally carried out, the prevalence and fatality of the disease might be greatly reduced.

Typhoid Fever.

Typhoid Fever.

I regret to have to report that an epidemic of Typhoid Fever occurred in the fourth quarter of the year, and as a result the total number of cases notified was much larger than usual. The cases and deaths since 1892 have been as follows :—

	Cases Notified.	Deaths Registered.
1892	260	39
1893	489	94
1894	511	105
1895	436	82
1896	483	108
1897	533	89
1898	637	113
1899	779	119

The extent of the epidemic can hardly be judged from the above figures, which apply to the whole year. In the first, second, and third quarters the number of cases was almost identical with the average, practically the whole of the increase being in the fourth quarter. It will, therefore, be more interesting and useful to study the prevalence and behaviour of the disease in the fourth quarter, rather than in the whole of the year.

The cases notified in the fourth quarter were as follows :—

	Notified Cases of Typhoid Fever.
4th Quarter, 1892	90
„ 1893	150
„ 1894	167
„ 1895	147
„ 1896	140
„ 1897	178
„ 1898	159
„ 1899	417

From 1893 to 1898, the number of Typhoid Fever cases in the fourth quarter of the year varied very little, the average being 157 ; but in the fourth quarter of 1899 no less than 417 were notified.

These figures indicate a serious outbreak of the disease, and call for somewhat detailed comment.

The excessive prevalence of the disease began about the middle of October and lasted till the end of the year, when a considerable reduction occurred. Since the end of the year there has been a further, though rather slow, reduction.

Typhoid Fever in wards.

The wards most affected will be seen from the following table :—

	Typhoid Fever Case-Rates, 4th Quarter, 1899.	
St. Stephen's	9·34	per 1,000.
Nechells	7·43	,,
St. Mary's	6·50	,,
Duddeston	4·94	,,
St. George's	4·55	,,
Ladywood	2·85	,,
Deritend	2·70	,,
Saltley	2·67	,,
St. Bartholomew's	2·52	,,
St. Thomas'	2·45	,,
All Saints'	2·29	,,
St. Paul's	2·08	,,
St Martin's	1·88	,,
Rotton Park	1·86	,,
Edgbaston and Harborne	1·74	,,
Balsall Heath	1·54	,,
Bordesley	1·52	,,
Market Hall	0·63	,,

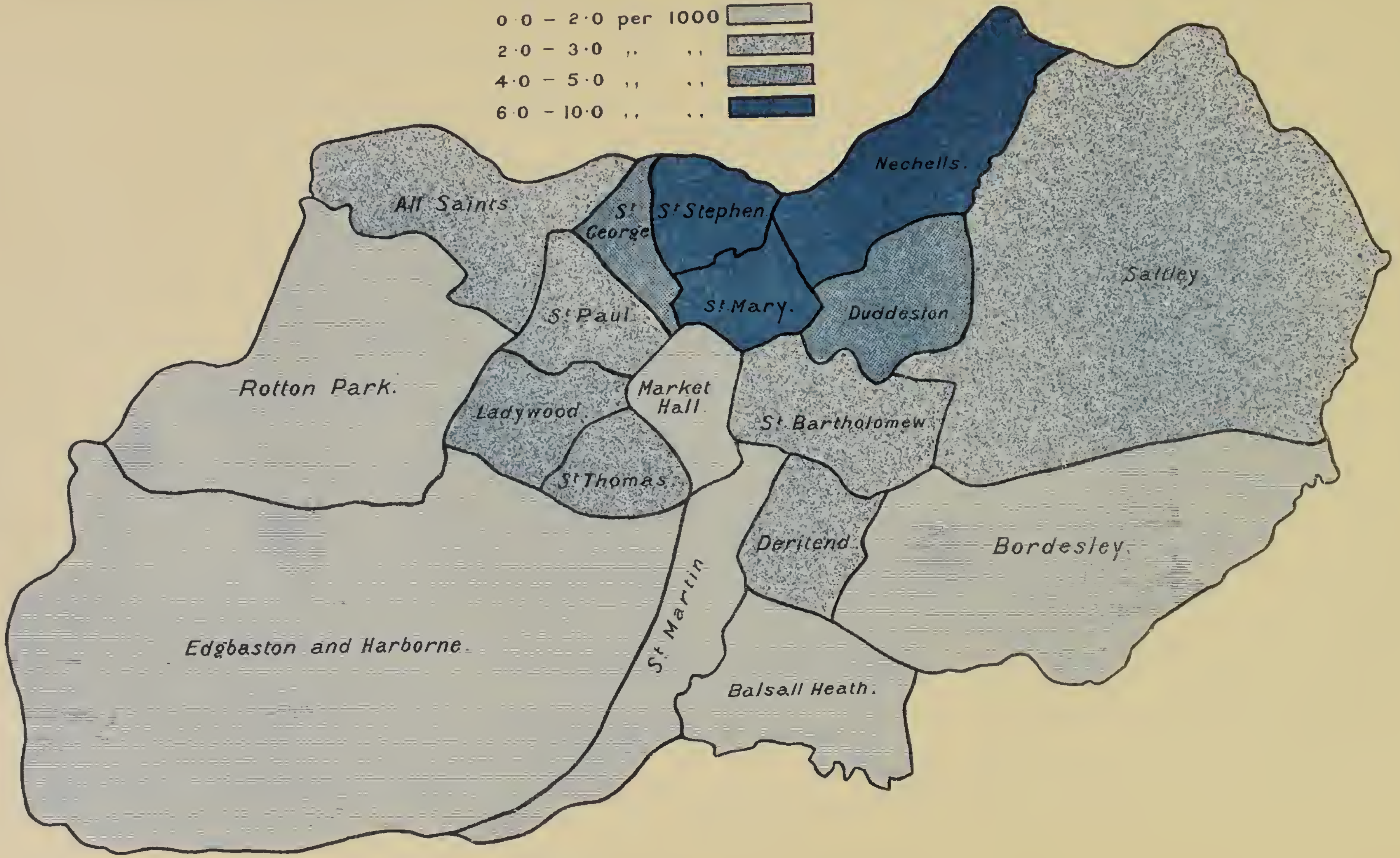
It will be noticed that five wards had excessive case-rates compared with the other thirteen. These five wards all adjoin one another, and they are situated on the north of the town, the southern half of the town escaping very lightly indeed. The chart on the opposite page indicates in a graphic manner the wards which suffered most.

Typhoid Fever at various ages.

The ages of the patients were as follows :—

Under one year old	No	cases.
1 to 5 years old	18	,,
5 ,, 10 ,,	56	,,
10 ,, 15 ,,	49	,,
15 ,, 25 ,,	151	,,
25 ,, 45 ,,	130	,,
45 ,, 65 ,,	11	,,
65 years and upwards	2	,,

TYPHOID FEVER CASE-RATES, 4TH QUARTER, 1899.



There are many reasons why typhoid fever should be looked upon as an exceptionally serious disease. One of them is suggested by the above figures, viz., that this disease claims by far the greater part of its victims from amongst those of the wage earning ages, two-thirds of the cases being in persons between the ages of 15 and 45 years. Sickness and death at these ages must, of course, be far more serious in their effect on social and commercial life than if it occurred either among the very young or the aged.

During the epidemic special enquiry was made into each case as it was notified, the object being (1) to discover, if possible, how the illness originated; (2) to find out and remedy any sanitary defects; (3) to give directions for preventing the spread of infection.

Spread of Typhoid Fever to relatives and friends.

I find that out of 417 cases, 36 were secondary cases at houses where a previous case had occurred a considerable time before. For example, on October 9th, Louisa K., living in H —— Street, was reported. She was removed to the General Hospital, but, a wrong address being given, the house could not be found and was not disinfected. Then followed Mary K. on November 4th, Grace K. and Ada K. on November 24th, and Robert K. on December 6th, all members of the same family. Perhaps the sequence of cases will be more easily seen if they are arranged in tabular form, as follows:—

October 9th ...	Louisa K.,	H— Street ...	Removed, but house not disinfected.
November 4th ..	Mary K.,	H— Street ...	Not removed.
,, 24th ...	Ada K.,	H— Street ...	Not removed.
,, 24th ...	Grace K.,	H— Street ...	Not removed.
December 6th ...	Robert K.,	H— Street ...	Not removed.

In such cases as this, there can be little doubt that owing to faulty isolation and disinfection, the infective material passed directly from the patients to other members of the household. This view is moreover rendered indisputable by the fact that when the first case is promptly removed and disinfection is carried out, a second case in the same house is quite a rare occurrence.

In addition to the cases mentioned above, there were 36 others which could be traced either to relatives and friends who had been visited while suffering from the disease, or to persons living in the same block of property and using some part of it, such as the yard and privies, in common with the other tenants. Thus, on October 4th, at the very beginning of the epidemic, Winnie M., living at 64, P—— Street, was notified. On November 14th, six weeks afterwards, her fiancé, who had frequently visited her, was found to be ill with the disease. On November 22nd, Sidney R., living at 66, P—— Street, next door to Winnie M., and using the same yard and out-buildings, was reported. Then followed William C., living in the same house as Winnie M., on December 7th, and Alfred C., a neighbour who had visited at 64, P—— Street, on December 15th. Here we have one member of the same household, two friends who had visited the house, and one neighbour who had not visited, but who used the same yard, etc., all infected from the first patient, who was kept at home throughout her illness. Again adopting the tabular form, the series of cases appears as follows:—

October 4th	Winnie M., 64, P— Street	Not removed.
November 14th	Charles H., 323, N— Row	Not removed (Fiancé).
,, 22nd	Sidney R.. 66, P— Street	Removed (next door).
December 7th	William C., 64, P— Street	Removed (same house).
,, 15th	Alfred C., back 64, P— Street	Not removed (same yard

Spread of Typhoid Fever through unrecognised cases.

Altogether there were 72 cases which could be traced to another patient who was known to have been ill for some time with typhoid fever. Moreover, indications were not wanting that an unrecognised case was sometimes the source of infection. For example, on September 23rd, Leah F., 27, T—— Street, was taken ill, the nature of her illness not being diagnosed. On October 18th her two brothers were taken ill with similar symptoms. On November 6th Agnes F. and Thomas F., living in the house at the back of 27, T—— Street, were reported as having typhoid fever. They had visited the patients at the front house, whose illness was not supposed to be typhoid fever. On November 15th another child, Edward F., living in the back house, was reported, and on November 30th two further cases in the same house, viz., Nellie F. and Annie F., were notified. Up to this time no clue had been obtained as to the origin of the first case at the back house. But on December 9th, Beatrice F., a sister of the three persons who had been ill at the front house, was reported as having typhoid fever, while on December 15th Arthur F., a brother, was found to have the disease, and in these two cases the symptoms were said to be very similar to those of the other three members of the family whose illnesses had not been diagnosed. There is good reason for supposing, therefore, that the first three cases at No. 27 were unrecognised cases of typhoid fever, and that they were the cause, not only of the two subsequent cases in the same house, but also of the outbreak in the house at the back.

Infectiousness of Typhoid Fever.

There is a disposition in many quarters to regard typhoid fever as only slightly infectious, if indeed it is infectious at all. I wish to express my very strong conviction that direct contact with the person or belongings of either a known or unrecognised typhoid fever patient is one of the greatest factors in the spread of the disease. That certainly appears to me to be one of the lessons taught by the recent outbreak. I earnestly hope that this opinion will be accepted by all who have to deal with typhoid fever cases, and that they will neglect no single precaution against the spread of infection to others. Amongst the most important precautions are the strict isolation of the patient, thorough cleanliness on the part of the nurse, who should wash her hands very frequently, thorough cleanliness also of the patient's body and bed clothing, and immediate disinfection of the stools.

Infectiousness of Typhoid Fever— *continued.*

The distribution of the cases over the various wards certainly seems to bear out the theory that the infection spread gradually from point to point, having its area of principal prevalence at the junction of St. Stephen's, St. Mary's, and Nechells Wards, and radiating from thence in diminishing degrees of intensity to more and more distant parts of the town. A glance at the map facing page 18 shows at once that the farther a ward lay from the point of greatest prevalence, the less it suffered from typhoid fever.

It is difficult to account for this distribution of the cases except on one hypothesis, viz., that the centre of the outbreak was near the junction of the three above-mentioned wards, and that from there the infection spread in a limited manner by means of infected persons and things.

If insanitary conditions had been the primary cause of the outbreak, for instance, I cannot imagine that St. Bartholomew's, Deritend, and St. Thomas', which are quite as insanitary as St. Mary's, St. Stephen's and Nechells, would have escaped so lightly. If contaminated water had been the cause, practically the whole of the town must surely have suffered in equal degree.

While, however, I do not think that insanitary conditions should be regarded as the prime cause of the outbreak, there can be no question that the disease will spread more easily where such conditions prevail. Probably in every instance the patient is infective, particularly as regards the stools, for some time before the illness is diagnosed, and therefore for some time before any precautions are taken. During this period, if there is a pan or ashpit-privy the infected fæces will be deposited there without any attempt at disinfection, and lying there for some time must prove a grave source of danger. Moreover, the more dirty and ill-ventilated the house and yard are, the more probability must there be that the infection will hang about for some time.

Typhoid Fever and Mussels.

In a large number of the cases the patients thought they had been made ill by eating mussels in a raw state. It is very difficult to obtain full and definite information on this point, chiefly because at the time of the enquiry several weeks have elapsed since the mussels had been eaten. I think, however, that there is reason to suppose that some of the cases might be due to eating infected so-called "shell-fish." In this connection one of the most suspicious cases was as follows. On December 11th, Herbert L., living in Vere Street, was reported to be suffering from typhoid fever. No clue to his illness could be obtained, but he stated that about a fortnight before he was taken ill he went to visit his sister living in Newtown Row, and that they both partook of mussels there. Enquiry was made at his sister's house, and it was found that she had been taken ill about the same time as her brother, with what afterwards proved to be typhoid fever. In her case also nothing suspicious could be discovered except the eating of the mussels.

Enquiry was made as to the places where patients were employed, but not more than two or three out of the four hundred patients were found to be engaged at the same place of business.

Nothing could be discovered to lead to the supposition that infected milk or impure water had anything to do with the outbreak.

Typhoid Fever and insanitary conditions.

The enquiry into the sanitary condition of the premises did not as a rule result in the discovery of any exceptional defects, and orders were given at once for such defects as existed to be remedied. An altogether undue proportion of the cases occurred, however, in the houses of the poor, 184 out of the 366 houses infected—about half—consisting of three rooms only, while only 16 were houses of more than seven rooms. During the epidemic ·47 per cent. of the three-roomed houses in the town were invaded, against ·25 of the houses of more than three rooms, showing that the poor suffered far more than the middle and upper classes.

As regards the privy accommodation, I find that 172 houses with water-closets, 179 with pan-privies, and 15 with ashpit-privies were invaded. In proportion to the total number in existence, the "pan" houses suffered about one-third more than the "water-closet" houses.

The general distribution of the cases undoubtedly warrants the statement that the greatest prevalence of the disease was in one of the poorest and dirtiest parts of the town. I am convinced that want of cleanliness of the house, yard, and outhouses is closely associated with the prevalence of typhoid fever, although when the disease has become prevalent a considerable number of persons who live under good sanitary conditions fall victims to it by infection from existing cases.

I pointed out in my last Annual Report that recent investigations have shown that the Typhoid Fever bacillus can exist in an impure soil for a very long period—for a number of years, in fact—remaining quiescent until circumstances favour its renewed activity. It is also known that a low temperature inhibits the growth of the bacillus, which is facilitated by a high one, and further that exposure to sunlight and fresh air is most inimical to the life of the germ. It is quite conceivable that in many parts of Birmingham, especially where unpaved yards, ashpit-privies, and pan-privies exist, or have recently existed, the ground contains the typhoid bacillus in considerable quantity. The abnormally hot weather experienced last year may perhaps have provided the necessary stimulus to the growth and spread of the micro-organisms concerned, and this may very possibly have been the fundamental cause of the extensive prevalence of the disease in certain districts.

Preventive measures.

The measures taken to limit the spread of infection were as follows :—

Unless isolation could be efficiently carried out at home, the patient's friends were urged to apply for the removal of the sick person to one of the hospitals or infirmaries. Unfortunately, however, the accommodation at the hospitals is very limited, and as a matter of fact only 112 out of 417 cases were removed from home.

Need of more Hospital accommodation

There can be no doubt that many of the 305 cases which were treated at home ought to have been removed to hospital, for no less than 132 were in houses which contained only two bedrooms. The inmates of these houses were as follows :—

2	inmates in	7	instances.
3	,,	16	,,
4	,,	22	,,
5	,,	26	,,
6	,,	22	,,
7	,,	20	,,
8	,,	12	,,
9	,,	6	,,
10	,,	1	,,

It is plain that any effective isolation is impossible where a large number of persons are crowded into two small bedrooms and one living-room, and there is great danger that other members of the household may not only catch the disease themselves, but may carry it to those with whom they associate outside their homes.

If a case had to be kept at home, advice was given as to the isolation of the patient and nurse from the rest of the household, and the disinfection of all the patient's dejections. When a case occurred at a retail shop the business was suspended, or arrangements were made for the persons attending on the patient not to serve in the shop.

Where there was no water-closet, but only a pan or ashpit privy, a special pan was provided and marked for the use of the patient only. I have already pointed out, however, that in such cases great danger must be incurred before the disease has been recognised.

After the termination of the illness, the patient's bedroom and bedding were disinfected. Special attention was also given by the cleansing staff to places were typhoid fever existed.

Typhoid Fever handbill.

During the outbreak I drew up a handbill giving information as to the precautions to be taken against typhoid fever, with directions that copies of it be distributed at the houses of patients, and at all houses in the immediate vicinity of each case of the disease. The following is a copy of the handbill :—

PRECAUTIONS AGAINST TYPHOID FEVER.

Dirt and bad air are two great causes of disease. Cleanliness is necessary to health.

Yards, drains, closets, and ashplaces should be kept very clean. If they are out of order, send word to the Inspector of Nuisances.

No wet rubbish must be thrown into the ashplace. Slops must be emptied down the drain, and never thrown into the street or yard or pan.

The house must be kept clean and free from bad smells. The windows should be opened as much as possible, and the chimneys should not be stopped up.

All milk should be boiled before use, and "shellfish," such as oysters and mussels, should not be eaten raw.

When there is Typhoid Fever in a house the great danger is in the discharges (motions and urine) from the sick person.

Great care should be taken to prevent the motions becoming dry and getting into the air. The patient's body and clothing must therefore be kept quite clean.

The discharges should be received into a vessel containing carbolic acid or chloride of lime, and taken straight away to be emptied down the water closet, or put into the *special* pan which is set apart for this purpose.

Dirty clothing, soiled sheets, and the like should be put at once into water containing a disinfectant before being taken from the sick-room. The washing must be done at home.

The person who is nursing the patient should mix as little as possible with others, and must never leave the sick-room without washing her hands and, if possible, changing her outer garments.

No food that has been in the sick-room should be eaten by anyone except the patient. The nurse should not eat or drink in the sick-room.

If the house is small, the patient should be removed at the beginning of the illness to a hospital, to prevent other people in the house from catching the disease.

As soon as the illness is over, or the patient is removed, the Inspector will disinfect the bedding and the sick-room.

NOTE.—In trying to find out the cause of a case of Typhoid Fever, it should be remembered that the disease is always caught two or three weeks before the patient feels ill.

ALFRED HILL, M.D.,
Medical Officer of Health.

The Council House,
Birmingham.

In my last annual report I strongly urged the provision by the Corporation of a hospital for typhoid fever cases. The recent epidemic has greatly strengthened my conviction that it is most desirable, and I am glad that your Committee has decided to make such provision.

The two great desiderata when the disease has broken out are (1) early diagnosis of the illness, (2) prompt removal to hospital or strict isolation at home. For the first of these the application of Widal's blood serum test would be a great advantage, while for the second a public hospital is indispensable.

DIARRHŒA.

Diarrhœa.

One of the most striking features in the year's statistics is the enormous death roll from diarrhœa and enteritis. The former disease caused 831 deaths, and the latter 580; making a total of 1,411, or 442 in excess of the quinquennial average.

Since 1891 the deaths from diarrhœa and enteritis have been as follows :—

	Diarrhœa.	Enteritis.	Total.
1891	340	113	453
1892	443	104	547
1893	828	200	1,028
1894	256	148	404
1895	605	282	887
1896	589	309	898
1897	923	521	1,444
1898	668	544	1,212
1899	831	580	1,411

The terribly high mortality in 1899 is at first sight very disappointing, especially as direct efforts have been made during the last two years to diminish the prevalence and fatality of diarrhœa. A closer study of the facts, however, does much to lessen this disappointment.

A similarly extensive outbreak of diarrhœa occurred in 1897, and I then pointed out that the causes of such outbreaks appear to be (1) Climatic, (2) Social, and (3) Sanitary. It will be of interest first of all to determine which of these individual causes have altered since the last great epidemic.

Diarrhœa and hot weather.

(1) The principal climatic condition associated with diarrhœa is an unusually high temperature of the air and ground. In this respect the year 1899 was far worse than the year 1897. For instance, the temperature of the air rose to 80° and upwards on eight days, against only four in 1897, while 75° or more was registered on no less than twenty-nine days against fourteen. Moreover the temperature of the ground at a depth of 4 feet—which is far more intimately associated with diarrhœal mortality than the temperature of the air—rose to 57°·8 last year, against 55°0 in 1897, there being forty-nine days when 56° was exceeded, against none in 1897. The latter is the temperature at which Ballard found that diarrhœa usually becomes epidemic.

Thus the climatic conditions were far more favourable to diarrhœal mortality in 1899 than in 1897; but the actual mortality, instead of being higher, was slightly lower. There can be little doubt that the improvement made in the sanitary condition of the districts where diarrhœa prevails was the means of preventing the epidemic from attaining still larger dimensions. In fact, large as the death roll undoubtedly was, there is reason for congratulation, having regard to the abnormally hot weather, that it was not far larger, as it no doubt would have been had the sanitary condition of the town remained the same as it was in 1897.

Diarrhœa and improved sanitation.

But since the epidemic of 1897 the newly-appointed Cleansing Staff has been engaged principally in swilling and sweeping pan privies and ashplaces, in which formerly there was often an accumulation of organic filth, such as forms a favourable medium for the growth and spread of disease germs. Pan privies in confined places must always be a nuisance and a detriment to health, but they must be less so now than they were before this periodical cleansing and deodorization were carried out.

Since 1897, moreover, a very large number of ashpit privies, and a small number of pan privies, have been converted to water-closets ; this, of course, is the only way in which the nuisance and injury from them can be entirely and permanently removed.

During the same period many hundreds of courts and back yards have been paved or repaired. By this means the presence of foul, unpaved ground close to dwelling houses has been largely obviated, and the danger of such ground being the medium of propagating diseases has been proportionately diminished.

All the improvements just mentioned are directed towards the removal of filth cónditions in proximity to houses, these conditions having been proved to be mainly instrumental in the production of diarrhœa, and it is my conviction that the sanitary condition of the town has been substantially improved by the measures indicated, and that, but for this improvement, the mortality during the almost tropical summer of 1899 would have been far greater than it actually was.

The cardinal evil with which an urban sanitary authority has to deal is almost always impurity of the air and soil. Every possible means should therefore be taken to promote cleanliness, in the widest sense and in every direction. With this end in view all ashpit privies, in which filth is allowed to accumulate for a long period, fouling as a rule both the air and the ground, require to be abolished. Pan privies also contaminate the air very seriously, especially in hot weather, the stench from them being often unbearable just at the time when diarrhœa is raging. As I have said in previous reports, they ought all to be converted into water closets. It is also very important that ashplaces, fowl-pens, manure-pits, yard surfaces, and roadways should be kept clean, that houses should be well ventilated, and that personal and domestic cleanliness should be practised. In the case of yards, privies, and ashplaces, which are used in common by the occupants of several houses, it is far more satisfactory to have the cleansing done by an official staff than to leave it to be done by the various occupiers in their turn.

It is by giving still greater attention to these matters that the mortality from diarrhœa, as well as from many other causes, will be reduced.

Advice in Diarrhœa cases.

During the height of the epidemic I directed the Health Visitors to relinquish for a time their ordinary house-to-house visitation, in order that they might find out as many cases of diarrhœa as possible, and give advice as to nursing and diet, in accordance with my instructions, more especially where there was no doctor in attendance. In this way they were able to visit over six hundred houses in which one or more cases of diarrhœa existed.

Diarrhœa and filth.

In the course of this special visiting it was all too plain that many filth conditions still existed in the districts in which diarrhœa was most prevalent. For instance, in one court the drain had been obstructed and the yard flooded with liquid filth for over a month, during which time five cases of diarrhœa had occurred. In another court there were leaky pans, and the smell from them and from some stabling adjoining was most offensive: in this court diarrhœa had broken out at three of the houses. In yet another instance an obstructed drain had been opened and left exposed for over a week, and every house had been invaded by diarrhœa.

The following is a list of the principal filth conditions reported during August in the districts in which diarrhœa was rife:—

Houses with dirty walls and ceilings	71
Houses with dirty floors, etc.	10
Houses needing windows opened	12
Houses with filth in cellars	8
Courts with obstructed water closets	7
Courts with leaky pans	4
Courts with offensive privies	14
Courts with obstructed drains	12
Courts with offensive drains	12
Courts with ash places in bad condition	19

In estimating the importance of the above figures, it should be borne in mind that only those nuisances were reported by the Health Visitors which forced themselves on their notice, the primary object of the visiting being to give advice, not to detect insanitary conditions.

Bearing this in mind, the figures certainly support the view that nuisances arising from filth conditions of all kinds are commonly associated with diarrhœa, and are probably in many cases the cause of the illness.

Diarrhœa and bad feeding.

While assigning the greatest importance to filth conditions as causing diarrhœa, it cannot be denied that improper food produces a large number of cases. For instance, a family of children at one of the houses visited had been made ill by eating bad fish, while at another house, a little baby had diarrhœa after eating a quantity of strawberries, and was even then allowed to eat tomatoes. Moreover, there can be no doubt that many lives are lost through bad feeding and nursing after the illness has begun. Thus, several children suffering from diarrhœa were discovered out of doors with hardly any clothes on. Others were having most unsuitable food, such as apples, plums, vegetables, stew, etc.

The Health Visitors were able to do something to reduce the mortality due to bad feeding and nursing, by the advice they gave at the houses where they found cases of diarrhœa. To help them in this work I drew up a handbill, of which the following is a copy :—

Precautions against Diarrhœa.

Diarrhœa handbill.

Diarrhœa is very common and very dangerous amongst babies, especially those that are hand fed.

Every baby should be fed at the breast if possible.

It must have nothing but milk or milk and water till it is seven months old and very little else till it is two years old.

Its feeding bottle and tube must be kept very clean.

All milk should be boiled before being used. If it has to be kept it should be boiled at once and covered over with a clean cloth.

No bad meat, fish or fruit should ever be eaten. Food should be kept in a clean, dry place.

The house should be cleaned very frequently. In warm weather the windows should be left open day and night. The chimney must not be stopped up. The cellar should be kept very clean.

The bedroom windows should be opened, the bed clothes thrown back, and the slops taken away early in the day.

Bad smells will cause diarrhœa. Offensive closets and bad drains should be reported to the Medical Officer of Health or Inspector of Nuisances at the Council House.

The yard and drain traps must be kept clean. No tea leaves, cabbage leaves, potato peelings, fish, etc., must be put in the ash-place. They should be burned.

When a baby has diarrhœa a doctor should be seen at once.

All persons suffering from diarrhœa should be kept warm and quiet, best of all by going to bed.

No meat, vegetables, or fruit should be eaten by them, but food made with milk should be used instead.

Their food should be taken cold or only slightly warm.

ALFRED HILL, M.D.,
Medical Officer of Health.

Health Department,
The Council House,
Birmingham.

Copies of the above handbill were distributed at houses where the disease existed, and also at all other houses in their immediate vicinity, about 3,000 being given out in this way. No doubt the advice given verbally and through the printed handbill was the means of reducing the mortality a little, but the Visitors being only four in number, were unable to deal with more than a small part of the large number of houses invaded.

In continuation of the enquiries made in 1897, I have again classified the records obtained by inspecting 500 houses in which deaths from diarrhœa occurred last summer, the houses being taken from all parts of the town.

Of these 500 houses, 301 consisted of three rooms only, 176 contained four, five or six rooms, while only 23 contained more than six rooms.

Diarrhœa and three-roomed houses.

There are about 39,000 three-roomed houses in the town, and about 73,000 larger houses. Thus, ·77 per cent. of the three-roomed houses had deaths from diarrhœa in them during the period over which my enquiry extended: in the larger houses in the same period, the proportion was only ·27 per cent., or about one-third as great. It is therefore in the very small houses, the homes of the poorest, that diarrhœa is so painfully fatal.

Diarrhœa and ventilation.

My enquiry also showed that 282 houses had ventilation and light at the front only, while 218 had either side or back doors, and were therefore better ventilated.

There are about 36,000 houses in the town with front ventilation only, and 76,000 with through ventilation, so that during the period of observation ·78 per cent. of the houses with front ventilation only had deaths in them, against ·29 per cent. of the better ventilated houses.

Diarrhœa and closet accommodation.

Out of the 500 houses inspected 238 had pan privies, 16 had ashpit privies, and 246 had waterclosets. It is estimated that there are about 45,000 houses in the town with pan privies, and 62,000 with waterclosets. Thus ·53 per cent. of the "pan" houses had deaths in them during the period of enquiry, against ·40 per cent. of the "water-closet" houses, showing a considerably greater incidence of diarrhœa on the "pan" houses.

Diarrhœa and cleansing of privies.

The foregoing figures correspond very closely in almost every respect with those obtained in 1897, and therefore strengthen the conclusions then arrived at. There is, however, one striking exception—the percentage of "pan" houses in which a death from diarrhœa occurred shows a marked decrease. In 1897 it was ·65 per cent., in 1899 it was only ·53, showing a reduction of about one-fifth in the incidence of diarrhœal deaths on "pan" houses.

This is particularly interesting for the following reason. During the epidemic of 1897 it was found that in many privies refuse had been accumulating for a long time past in the space around the pan, while the floor of the privy itself was often fouled with excreta and urine, and seldom swilled. Your Committee therefore arranged for all pan privies to be systematically swilled and swept by a staff of men, and this has been continued ever since. There can be little doubt that the improvement effected in this way in the condition of the pan privies has been the cause of the much lighter incidence of diarrhœa upon the houses connected with them.

The opinion is thus greatly strengthened that pan privies are a serious source of ill-health, especially if they are badly scavenged. The best scavenging possible will not, however, obviate all the nuisance and injury to health arising from the retention of fæces and urine for a week or more in a close hot atmosphere, such as characterises our courts in the summer; only conversion of the pan privies to water-closets can effectually do so.

Diarrhœa in wards.

The distribution of the mortality during the third quarter of the year—which may be taken as representing the epidemic period—was as follows :—

	Diarrhœal Death-rates per 1,000.
St. Stephen's	14·6
St. Bartholomew's	12·9
St. Mary's	12·8
Deritend	12·0
Saltley	10·7
Nechells	10·5
St. George's	10·2
Duddeston	10·0
St. Paul's	9·2
St. Thomas'	8·0
St. Martin's	7·5
Ladywood	6·0
All Saints'	6·0
Bordesley	6·0
Balsall Heath	5·6
Rotton Park	5·1
Market Hall	4·8
Edgbaston and Harborne	3·6

These figures show how greatly the mortality from diarrhœa varied in different parts of the town, the death-rates ranging from 3·6 in Edgbaston and Harborne ward to 14·6 in St. Stephen's ward, or four times as many. This indicates very clearly that it is not climatic conditions alone that produce the mortality from diarrhœa: if it were, the death-rates, like the weather, would be practically identical in all the wards.

It is to be noted that almost without exception the wards that suffered the highest diarrhœal mortality are those which usually have a high death-rate from all causes; in other words, diarrhœa is most fatal in the unhealthy districts. This emphasises the view that bad social and sanitary conditions, which are admittedly the cause of the high total death-rates, are also the cause of the high diarrhœal death-rates in the same districts.

The general conclusion at which I have arrived after a study of the most recent outbreak of diarrhœa is, that the insanitary conditions which favour the disease have been considerably ameliorated by the special measures adopted since 1897. This should, I think, encourage your Committee to persist in its efforts to improve the privy accommodation, the yard paving, and the condition of the houses in the districts in which diarrhœa is so fatal. At the same time it will be necessary to do all that is possible by instruction and advice to minimise the mortality which is due to improper feeding.

Phthisis or Consumption.

Phthisis. It is unsatisfactory to find that 1,078 deaths—137 above the average—were set down to tubercular diseases, 841 being due to phthisis, 78 to tabes mesenterica, 63 to tubercular meningitis, and 96 to other or not specified forms of tuberculosis.

I pointed out in my last Annual Report that tuberculosis is an infectious disease, transmitted to the person attacked by the inhalation, ingestion, or inoculation of tuberculous matter from some other patient. The chief sources of infection are the sputum of phthisical patients, and the various discharges in cases of tuberculous disease of the intestines, of the mouth, nose, or ear, of the glands and of the bones. Every precaution should therefore be taken to completely destroy all such discharges.

By far the most important form of the disease is that known as phthisis or consumption of the lungs. This form is apparently always acquired by inhalation of tubercle bacilli, which are present in large quantity in tuberculous discharges, and become dried and air-borne.

Phthisis in wards.

Fortunately, exposure to sunlight and pure air is fatal to the tubercle bacilli, and hence tuberculosis is far more common in the small badly ventilated houses of the poor than elsewhere. The mortality last year in the various wards was as follows:—

	Death-rate from Phthisis and other Tubercular Diseases.
St. Mary's	3·94
St. Bartholomew's	3·26
St. Stephen's	2·79
Deritend	2·43
St. Martin's	2·23
St. Paul's	2·20
Duddeston	2·15
St. Thomas'	2·04
Balsall Heath	1·99
Ladywood	1·91
Nechells	1·91
Rotton Park	1·84
Market Hall	1·83
All Saints'	1·79
St. George's	1·68
Saltley	1·36
Bordesley ... . , ...	1·16
Edgbaston and Harborne	1·12

Thus low-class wards like St. Mary's and St. Bartholomew's show a much greater mortality than better class wards like Edgbaston and Harborne and Bordesley. The fact that tuberculosis claims so many victims in the parts of the town where the houses are of the worst kind, should act as an additional stimulus to the efforts which are now being made to improve such houses.

There is little doubt that when a case of advanced phthisis has been treated at home, the house has become infected, and is liable to retain the infection for a considerable time.

I consider, therefore, that disinfection should be regularly employed after cases of this disease.

WOMEN HEALTH VISITORS.

Appointment of Women Health Visitors.

About the middle of April four Women Health Visitors were appointed, their mission being to visit the houses of the poor, with the object of helping the tenants to make their homes as healthy and as comfortable as possible, having regard to their construction.

The directions given to the Visitors were as follows :—

To visit from house to house in such localities as the Medical Officer of Health shall direct.

To carry with them disinfectant powder and use it when required.

To direct the attention of those they visit to the evils of bad smells, want of fresh air, and dirty conditions of all kinds.

To give hints to mothers on the feeding and clothing of their children, and to use their influence in getting children sent regularly to school.

In cases of sickness, to assist in promoting the comfort of the invalid by advice and personal help.

To urge, on all possible occasions, the importance of cleanliness, thrift, and temperance.

They must note—

(1) The general sanitary condition of the house.
  (*a*) The number of rooms and of occupants.
  (*b*) The existence of bad smells, and whether they arise from deficient ventilation, from bad drainage, or from accumulations of filth.
  (*c*) The state of the walls and floors : whether dirty from the tenant's or landlord's neglect, or in need of repair.

(2) The general mode of living, particularly with regard to personal and domestic cleanliness.

(3) The feeding and clothing of children, especially of those under two years old. Whether the baby is nursed by the mother or fed by hand ; if the latter, what it is fed upon.

(4) Any cases of illness in the house—
  (*a*) Nature of the disease.
  (*b*) Whether there is a medical man in attendance.
  (*c*) How far the necessary sanitary precautions are being carried out.

The Health Visitors commenced their work in streets in which the proportion of houses let at very low rents is exceedingly large ; that is, in the very poorest streets in the town. In my last Annual Report it was shown that these are just the streets where the mortality is excessive, and, therefore, the streets in which the Visitors' work is most needed and is likely to be productive of good results.

Work of Health Visitors.

From the time of their appointment to the end of the year the Visitors visited about 11,700 houses, and the conditions discovered prove beyond dispute that their visits were urgently needed, a very large proportion of the houses being found to be badly in need of improvement, the fault in many cases being the tenant's, and in many others the landlord's.

There is no doubt that the work done by the Health Visitors has caused those tenants who had neglected their houses to pay more attention to the hygiene of the home, while it has helped and stimulated those who already were trying to make their homes as healthy as possible.

In addition to the 11,700 primary visits, about 3,000 re-visits were paid, and in almost every instance considerable improvement could be seen. This is very encouraging, as is also the fact that the Visitors have generally been well received, it being understood that they are anxious to help rather than to find fault, and that they are specially interested in the sick, the young, and the aged.

Health Visitors and deficient ventilation.

It is perhaps somewhat surprising that the very poor have so little idea of what is necessary to make their homes healthy. Most of them, for instance, live in houses which are badly ventilated, having no back doors nor windows. Yet it is quite common to find that the windows which exist are never opened, and that in the bedrooms the chimneys are stopped up, so that no air can pass through them.

A detailed tabulation has been made of the Visitors' reports for the third and fourth quarters of the year, from which it appears that during that period it was necessary to order the windows to be opened in 981 instances, and the chimneys to be unstopped in 185. I need hardly say that a chimney when open freely to the room acts as an excellent outlet for the bad air.

Health Visitors and dirty homes.

Cleanliness, again, is most essential to health, yet in 894 instances during the half-year it was found that the house was very badly in need of cleaning. In some cases the filthiness of the floors was almost indescribable. Whenever a dirty house is found the Visitor keeps calling until it has been properly cleaned.

Health Visitors and neglected bedrooms.

Great attention is paid to the bedrooms, both as regards their cleanliness and the sleeping accommodation provided in them. In 933 instances in the half-year the bedroom slops required to be emptied, and in 212 the bedding needed cleansing. In some cases the bedding was horribly filthy, and full of vermin. A large number of mattresses were in such a condition that they had to be burned.

Health Visitors and sleeping accommodation.

The enquiry into the sleeping accommodation has proved very important. Although many of the houses are overcrowded from a hygienic if not from a legal standpoint, yet it is not at all uncommon to find that one bedroom is not used, either because it needs repairing, or because it is less trouble to use one room only for the whole household, especially if the second bedroom is an attic. At one house, for example, a father, his son, aged 18, and a daughter, aged 15, all slept in the same room, while a second room remained unoccupied. Such a condition of things must be not only detrimental to health, but also very prejudicial to morals. In this instance the girl was persuaded to clean the attic and move her bed into it.

Health Visitors and overcrowding.

There were altogether 135 cases in the half-year in which people were urged to make use of an unoccupied bedroom. In 35 other instances they were asked to provide screens in rooms occupied by persons of opposite sexes. At 70 houses the Visitors urged the provision of additional beds, as far too many people were sleeping together. In 24 cases it was necessary to order lodgers to quit, as they caused overcrowding, while in 102 other cases the tenants were urged to obtain a larger house, as the family was too numerous for the accommodation provided. Unfortunately the dearth of small houses and the high rental demanded have made it difficult to get this advice acted on.

Much of the work just described could not possibly be done except by women, and the Health Visitors have been able to do a great deal to improve the arrangements for sleeping which would have remained undone but for their appointment.

Health Visitors and neglected children.

Another important part of the Visitors' work is to see that the children in the houses visited receive proper attention. As a result, 364 women were ordered to wash their children and make them more comfortable and tidy, 361 were advised as to the best food to give to their babies and to sick persons, while a very large number were told to cleanse the baby's feeding bottle, and, if necessary, to destroy the old india-rubber tube and get a new one.

Health Visitors and sickness.

In more than 3,000 houses illness of some kind existed, and the Visitors gave advice as to nursing and food, as well as personal help in bandaging wounds and sores, and in other ways. In 530 instances, although the illness was of a serious nature, there was no doctor in attendance, and the Visitors urged that one should be consulted at once. By this means a considerable amount of suffering and death has probably been avoided, owing to earlier medical treatment than would otherwise have been obtained.

As a general rule, there seems to have been sickness at about one in every three houses of the class which is visited.

Health Visitors' handbills.

The Visitors have distributed a very large number of handbills relating to the management of the house, the rearing of infants, and the precautions against consumption, typhoid fever, diarrhœa, measles, and whooping cough. The following is a copy of the handbill relating to cleanliness, ventilation, etc. :—

Advice to Householders.

A.—As to the House :—

(1) Floors should be scrubbed very often, as dirt may cause disease.

(2) Walls should be dusted, not swept (tie duster on broom head and dust the walls all over, to keep cobwebs and dirt away).

(3) Bedroom windows must be opened first thing in the morning, and all slops emptied and articles thoroughly washed out with clean water early in the day.

(4) Beds must be stripped, shaken, and turned every morning, and the bed clothes thrown back and left to air till afternoon.

(5) As few people as possible—not more than two or three, as a rule—should sleep in the same bedroom.

(6) No rubbish is to be put in the bedroom grates, and all chimneys must be kept clear.

(7) No pieces of carpet, bagging, or old clothing are to be hung across the windows. These keep the bad air from getting out and the fresh air from coming in.

B.—As to the Yard, Brewhouse, Closets, Ashtubs :—

(1) Keep the yard clean. Swilling must be done often, and all rubbish cleared off the drains.

(2) No wet rubbish must be thrown into the ashplace, which must always be kept dry. Potato parings, scraps of food, and such like should be thrown behind the fire.

C.—As to Food :—

(1) No fruit, meat, or fish that is going bad should ever be eaten.

(2) All milk should be boiled. If for babies or young children, it must be boiled.

(3) Beer and spirits are not necessary, unless in illness or old age, and often cause ill-health. They are very bad for children.

(4) Instructions for feeding babies can be had from the Medical Officer of Health, or the Health Visitors.

Special Notice.

If the closets or drains are stopped up at a point out of reach, send at once to the Medical Officer of Health or Inspector of Nuisances, at the Council House.

In the case of damp rooms, broken or filthy walls, roofs that let in rain, which your landlord will not put right, send word to the Council House and the Inspector will visit.

ALFRED HILL, M.D.,
Medical Officer of Health.

THE COUNCIL HOUSE,
BIRMINGHAM.

From time to time it has been found desirable to bring cases under the notice of the Birmingham and District Nursing Society, the Police-Aided Association for Clothing Children, the National Society for the Prevention of Cruelty to Children, the Mutual Aid Societies, and other philanthropic agencies.

Health Visitors and defective houses.

In the course of their work the Health Visitors became aware of a number of defective conditions which it devolves upon the landlord to remedy. Information respecting these was sent to the Inspector of Nuisances, who served either formal or informal notices for the necessary work to be done at about 1,800 different houses.

Need of more Visitors.

I think it is the unanimous opinion of all who are brought into contact with the Visitors that the work they do is urgently needed, and has already proved very beneficial. The general uplifting of the life of the very poor has been aimed at, and much success has already been attained. It may now be well to consider how far the present staff is equal to the work it has in hand.

In 1898 there were in the city about 13,000 houses let at a rental not exceeding 3/6 per week. These are the houses occupied by the poorest of our citizens. If the Visitors confine their attention to these houses only, they will be visited about once a year. But there is ample evidence that a great many other houses at a little higher rental also require attention. For instance, there are 26,000 other houses consisting of three rooms only, and experience shows that most of these need visiting. If all the three-roomed houses are to be visited once only, it will take the present number of Visitors about three years to go through them, which is far too long a time.

In view of these figures it appears that the present staff is too small to carry out the work as extensively as might be desired. It is, indeed, very difficult to effect any permanent improvement in the habits of the people unless a large number of the houses can be visited at much shorter intervals than has been possible up to the present time. I therefore think that the staff of Visitors should be greatly increased.

I understand that in Manchester, where this kind of work has received very marked attention, the number of Visitors has been increased from time to time, until in 1898 it had risen to 19, the salaries of 10 of them being paid by the Corporation and the remainder by voluntary subscriptions. The experience of Manchester, therefore, strengthens the conclusion that the number of Visitors in Birmingham will need to be greatly increased.

HOUSE ACCOMMODATION.

Houses unfit for habitation.

During the year I made representations to you under the Housing of the Working Classes Act that 29 houses were quite unfit for habitation. Two of these were subsequently closed by the owner, without legal proceedings being taken, 14 others were repaired, and the remaining 13 are still under notice.

In addition to these, 119 houses were closed under the Public Health Act, and 18 others were demolished. I inspected a large number of properties during the year which were subsequently dealt with under the latter Act.

In the routine work of the department, 2,564 dirty houses were stripped of wall paper and limewashed, and 1,927 were repaired.

ROYAL STATISTICAL SOC
21 MAY 1900

Scarcity of small houses.

There is considerable difficulty in maintaining the small houses in the City in a good state of repair, owing to the comparative scarcity of such houses, which makes tenants willing to put up with a very defective dwelling rather than take the risk of being ordered to leave.

The same scarcity of houses also makes it difficult for your Committee to act as freely as could be wished in the matter of closing unhealthy houses, for unless there is sufficient accommodation elsewhere, the closing of houses must result in increased overcrowding.

Towards the end of June I received a letter from the occupier of a house in Sherbourne Road, complaining that the landlord had given him notice to leave because he believed him to have called the attention of the Health Department to the filthy condition of the water-closet. I also hear very frequently that tenants are afraid to report sanitary defects at their houses for fear the rent should be raised. I greatly regret that this feeling exists, as it is most desirable that all insanitary conditions should be made known to me or to the Inspector of Nuisances, in order that they may be promptly remedied.

Some time ago my assistance was asked by one of the tenants of a court in Bordesley Street under the following circumstances. Some weeks earlier the property had been found to be in need of repairs, and orders had been given for the necessary work to be done. The day before I received the request for assistance every tenant on the property had received a printed notice to leave, in order that the repairs might be executed. The tenants were very much put about, as they said it was very difficult to find an empty house, and appealed to me to help them, but unfortunately I could do little to assist them out of their difficulty.

There seems to be no doubt whatever that during the last few years there has been a large increase in the rentals of very small houses. For many years, also, the number of such houses has been decreasing, owing to extensive demolitions for business purposes. From these two causes the number of houses within the reach of persons who earn only scanty wages has been greatly reduced.

The Water Committee have published returns for the area supplied by them, which comprises Birmingham and many of its surburbs, showing that in 1899 there were 19,454 houses in that area at rentals of 3/6 per week or less. In 1895 a similar return showed that there were 20,507 such houses. Thus in face of a great increase in population the number of three and sixpenny houses in Birmingham and its surburbs appears to have decreased 5 per cent. in four years.

Overcrowding.

In November I visited a number of houses which were reported to your Committee as overcrowded, and made the following report upon them :—

"In considering the question of overcrowding, it is not easy to fix the minimum amount of cubic space which shall be regarded as indispensable. Perhaps it may be useful to bear in mind that in Lodging Houses the minimum amount of space in a sleeping room, as prescribed by the bye-laws, is 300 cubic feet for each adult, two children under 10 years of age being counted as equal to one adult, and to compare the accommodation at the houses in question with this standard.

"*Five houses at the back of 49, Price Street.*

"Two of these houses, Numbers 1 and 2, are very small indeed, and are occupied by large families. They originally had only one bedroom to each house, but this bedroom has been divided into two very little ones. The other three houses are rather larger. The following are particulars of the individual houses :—

"*1, back of 49, Price Street.*

"Three adults and two children sleep in one room and have only 162 cubic feet of space per person, counting two children under 10 years as one person; two adults and two children sleep in the adjoining room, and have 189 cubic feet per person. Judged by the lodging house standard, therefore, the house is badly overcrowded. The rent of this small house is 4/6 per week.

"*2, back of 49, Price Street.*

"In one small bedroom two adults and two children sleep, giving only 182 cubic feet of air space per person. In the other room there are three adults, with 189 cubic feet each. This house is therefore overcrowded, the inmates having less than two-thirds of the minimum amount of space required in a lodging house. The rent is 5/- per week.

"*3, 4, and 5, back of 49, Price Street.*

"These are houses with two bedrooms, and with only three, two, and four inmates respectively. The cubic space in the bedrooms varies from about 400 to 700 cubic feet per head.

"*71, New John Street.*

"This is a three-roomed house, with large bedrooms. One bedroom is occupied by the mother and two daughters, who have 468 cubic feet each, and the other by the father and two sons, who have 529 cubic feet each.

"*2, 3, and 4, back of 58, Sheep Street.*

"These are houses let in lodgings, and all of them have more than the minimum amount of space which can be enforced by the bye-laws relating to such houses.

"*4 court, 11 house, Duke Street.*

"A man and his wife and two children sleep in the attic, and have only 252 cubic feet of space per head. This room is, therefore, overcrowded, judged by the standard in force in lodging houses.

"*2 court, 2 house, Bagot Street.*

"This is a three-roomed house, with six inmates, and the amount of space is larger than can be insisted on in lodging houses, viz., 480 cubic feet per head in one room and 386 in the other.

"*11 court, 11 house, Dartmouth Street.*

"The attic is let to two lodgers, and the tenant of of the house, his wife, and their three children, all sleep in one bedroom having 282 cubic feet per person. This bedroom is, therefore, overcrowded, judged by the lodging house standard.

"*Back of 62, Ingleby Street.*

"This is a bad case. The bedroom is occupied by an old couple and three boys, aged 13, 14, and 17 years, giving only 229 cubic feet per head. The attic is used by a man and his wife and three young children, having 299 cubic feet per head. Compared with the lodging houses, the bedroom is overcrowded, and the attic slightly so.

"*3½, Aston Road.*

"There are three bedrooms, two of which are very large. There are ten inmates, all of whom have more than 300 cubic feet of air space in their sleeping rooms.

"To sum up the results of my investigations, five of the houses are overcrowded when judged by the rules in force in respect to lodging houses, but the other nine are not."

Population in three-roomed houses.

In order to discover the actual density of population in the houses of the poor, I caused the Health Visitors' returns for the fourth quarter of the year to be examined, with the following result. Out of 2,938 houses containing two bedrooms each—

1	contained	14	persons, or	7·0	per room.
3	„	12	„	6·0	„
9	„	11	„	5·5	„
23	„	10	„	5·0	„
58	„	9	„	4·5	„
125	„	8	„	4·0	„
244	„	7	„	3·5	„
391	„	6	„	3·0	„
2,084	„	less than 6 persons.			

Thus there were 219, or 7·5 per cent. of the three-roomed houses visited which contained four or more persons per bedroom.

From measurements made at various times it appears that in the cheap three-roomed houses the two bedrooms generally contain from 1,000 to 2,000 cubic feet of space. If such a house had eight inmates, the cubic space per head would be between 120 and 250 feet, very much less than the amount required in a common lodging house, where great attention is paid to ventilation, light, and cleanliness, which is not the case in many private houses. There seems little doubt, therefore, that a considerable number of three-roomed houses are overcrowded.

Need of more small houses.

All these facts, and many others that come to my notice from time to time, greatly strengthen the opinion that it is necessary to provide a considerable number of labourers' dwellings. I am afraid it is useless to look to private enterprise to provide them, and the duty of doing so, therefore, devolves upon the Sanitary Authority.

Something is being done already in the erection of a block of dual houses in Milk Street. These, however, only comprise sixty tenements, and therefore affect the housing question to a slight extent only. Moreover, I cannot advocate proceeding on quite the same lines again, because the erection of the Milk Street houses was preceded by the demolition of a slightly larger number of houses. At the present time it is very necessary—indeed I consider it essential—that new houses be erected before any considerable number of old ones are pulled down.

It should be borne in mind also that the object of the Sanitary Authority is to provide accommodation for the labouring classes rather than for skilled artisans. It is therefore very desirable that the houses erected should be near to the places where unskilled labourers are likely to find work.

Fortunately in Birmingham it is not impossible to find vacant land at a distance of a mile or a mile and a half from the centre of the town, and within easy reach of a large number of factories and workshops. The plan which commends itself to my mind is for the Corporation to acquire, if possible, not one large site, but a number of smaller sites, on which at present there are no buildings, and upon them to erect substantial but inexpensive dwellings for the unskilled labouring classes. It seems to me that if vacant land were acquired, it would not be difficult to build such houses without entailing expenditure out of the rates.

Directly a sufficient number of new houses have been erected I should like to see the removal of the worst of the existing houses pushed forward with greater vigour. In many instances I believe the healthiness of a crowded block of dwellings might be immensely improved by the demolition of one or two of the houses and the conversion of the ground they stood on into a good well-paved yard. It is want of air and light that constitutes the great radical defect of an insanitary area, and such procedure might reduce this want to a minimum.

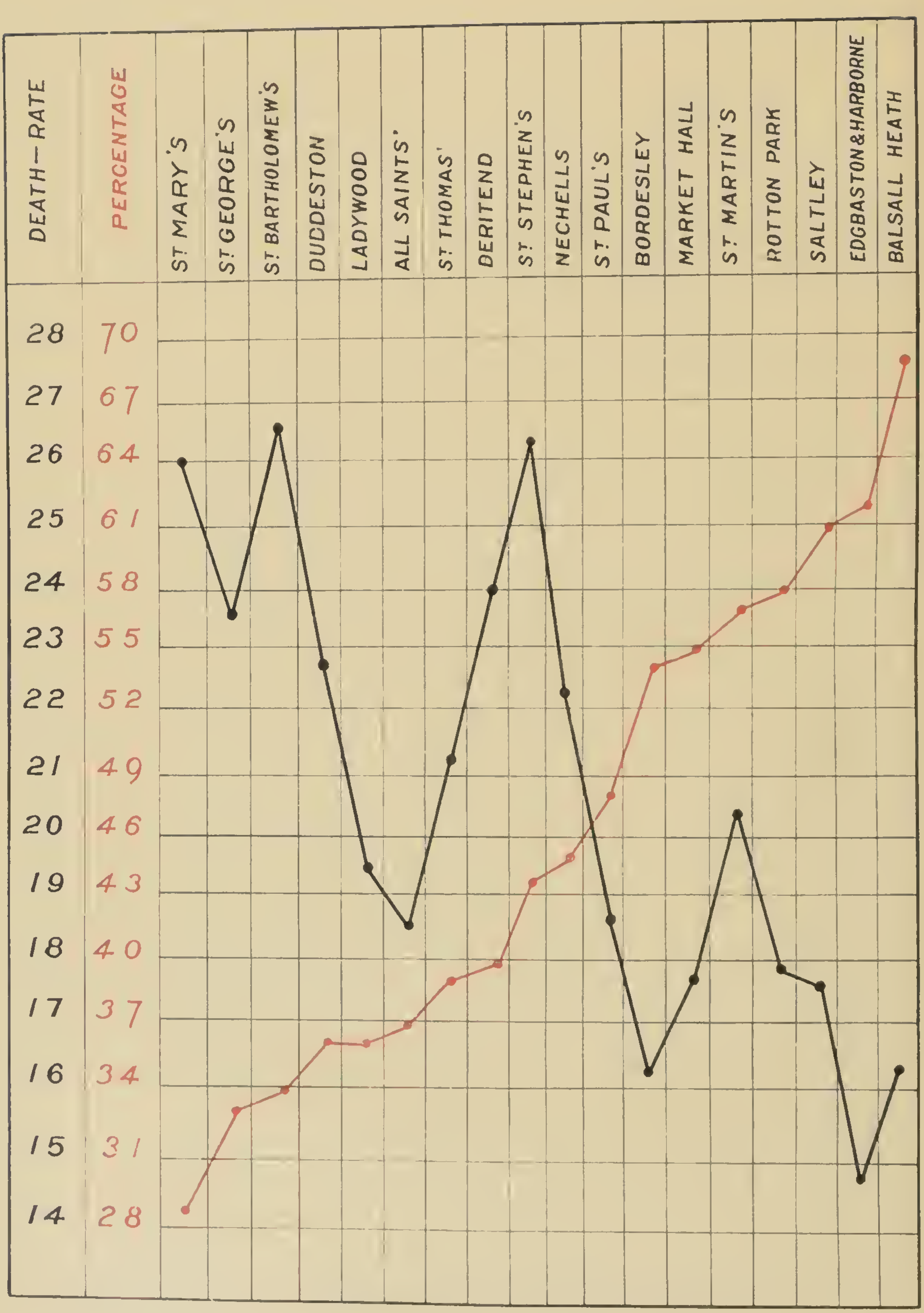
As is well known, the Corporation already own a large number of old-fashioned labourers' dwellings on the Improvement Area, and these cottages are always found to be in a far healthier state than other houses of a similar kind in the same neighbourhood.

I am more and more impressed with the need of more ample air space and light in small houses. It is impossible to doubt that houses hidden away in close confined courts out of the sight of all except their own inmates, beyond the reach of currents of fresh air such as sweep the open streets, beyond the influence also of sunlight, which is so powerful a germicide, will be neglected both by the owner and by the tenant, and that they are most prejudicial not only to the physical health but also to the moral character of those who dwell in them. It therefore behoves all who have the welfare of the town at heart to give their thoughtful attention to the housing question in order that public opinion may consistently support the Sanitary Authority in its efforts to effect an improvement.

CLOSET ACCOMMODATION.

Conversion of ashpit privies.

During the year no less than 1,222 ashpit privies were converted into water closets at the request of your officers. This is an excellent record, and shows that the abolition of the midden system is proceeding at a fairly rapid pace.



DEATH-RATE PER 1000, 1895-1899 ———

PERCENTAGE OF HOUSES WITH WATERCLOSETS ———

Only 199 pan privies were converted to water closets, this being quite an insignificant number compared with the 31,000 still in existence. I am firmly convinced, that pan privies, unless they are situated in exceedingly open positions, are a most fruitful source of ill-health. Situated as many of them are in Birmingham, in close confined courts, they become in hot weather a most intolerable nuisance, and at all times of the year I believe them to play an important part in the causation and spread of disease.

Conversion of pan privies.

I have already shown that houses provided with pan privies suffered more from Typhoid Fever and Diarrhœa than those possessing water closets. I now wish to show that the districts where pans are most common are the least healthy, and those where water closets prevail are the most healthy. To do this, I have prepared the diagram on the opposite page.

Pan privies and Diarrhœa and Typhoid Fever.

The black line in the diagram represents the variation of the total death rate in the different wards. The red line shows the percentage of houses with water closets. As the proportion of water closets increases, so the death rate falls on the whole in a striking measure.

Pan privies and total death-rate.

Of course it is not probable that the conversion of the pan privies in the unhealthy wards would by itself lower the death rate to the level of the healthy wards—other sanitary defects will also have to be remedied before this will happen. But I have no doubt that this one improvement only would have a marked effect in lowering the death rate in the unhealthy wards.

It is, of course, well known that the pan privies were provided with the consent, and in most cases at the request, of the Corporation. I think your Committee would be justified, therefore, in offering to bear a portion of the cost of replacing them by water-closets, providing the work is done to your satisfaction. If this plan were adopted it would be quite reasonable to insist on the early removal of the pan privies, and any money expended would most certainly be recouped in the shape of improved health and greater fitness for work on the part of those affected by the alteration.

Suggestion as to conversion.

So long as the pan privies exist a large amount of work is necessary to keep them as free from serious nuisance as possible. For this and other purposes a staff of cleansers is engaged. Last year they cleansed and deodorized over 80,000 privies and 34,000 ashplaces.

Cleansing of pan privies, etc

Limewashing of privies, etc.

The Cleansing Staff also limewashed a number of closets, ashplaces, wash-houses, and walls at the expense of the landlord, in addition to those done by the landlord himself, under notice from the Inspector.

In the case of defective water-closets and pan privies, the landlord is called upon to do the necessary repairs. Where an ashpit privy is found to be defective, notice is given for its conversion to a water-closet.

I attach great importance to the cleansing of houses, outbuildings, and yards. Indeed, I am quite convinced that of all insanitary conditions dirtiness is by far the most hurtful.

COURTS AND YARDS.

Paving of courts and yards.

The improvement of the courts and yards continues to be pressed forward, 347 having been paved and 592 having been repaired during the year. It is of the utmost importance that courts should be well paved, first, because the pollution of the ground is prevented thereby, and, secondly, because the surface when paved can be properly cleansed, which is of course impossible in an unpaved court.

Cleansing of courts.

Last year the staff cleansed 2,519 courts by arrangement with the owners or tenants. Notices were served on the tenants to cleanse their courts in 206 instances.

Cleansing of gutters and traps.

In addition to washing the court surfaces where possible, the staff cleansed 9,640 surface gutters and cleared out 51,804 drain traps, the latter being new work inaugurated last year.

LODGING HOUSES.

Common lodging houses.

A large amount of attention has been given for many years past to the common lodging houses in the city, and a marked improvement is shown in their construction and condition. Many of the older houses have been removed from the register, and the new houses which take their places are of a far superior kind, being much larger, better lighted and ventilated, fitted with more convenient means for cooking, and provided with much better lavatory and closet accommodation.

Thus during the last five years eight new lodging houses have been put on the register, having a total of 791 beds. One of them contains 250 beds, another 161 beds, another 100 beds. On the other hand 14 old-fashioned and very inferior houses have been closed. The largest of these contained only 22 beds, and the total accommodation in the fourteen houses was only 227. It is quite easy to see that the proprietor of a house containing about 100 beds can well afford to provide a superior building and better accommodation in every respect for his lodgers than the owner of a house which will only hold about 20. The substitution of a few large houses for the numerous small ones which formerly existed makes the work of inspection much easier; it is indeed a great advantage in every way.

Houses are not now registered for persons of both sexes, it being found that separate houses for men and women are far more orderly and decent. In the last five years 15 houses in which both men and women lodged have been changed into houses for the use of one sex only.

Wire mattresses are almost always provided in new houses, and are found to be much more healthy.

In future every new Common Lodging House is to have an external stair-case as a means of escape in case of fire.

I recently inspected a large new lodging house containing 250 beds. It is well lighted, and ventilated by means of air shafts conveying warm air to every room, and extraction cowls for withdrawing the vitiated atmosphere. All the partitions in the sleeping rooms have open spaces at the top and bottom, so that no part of the room is entirely divided off from the rest. A good number of wash basins are provided in the lavatory. Two large cooking stoves are placed in the kitchen, and to ensure greater cleanliness the walls of the downstairs rooms are built with glazed bricks. Fire buckets are provided on each landing, and the bottom sashes of the bedroom windows can be quite easily taken out in case escape by means of the windows is necessary.

It is a pleasure to record so great an improvement in the Common Lodging House accommodation in the town. I could wish, however, that the minimum amount of air space prescribed by the Bye-laws was considerably more than 300 cubic feet per head, but fortunately in most of the new houses the actual amount is considerably in excess of this quantity.

Houses let in lodgings.

There are a number of houses in the town let as furnished tenements which are systematically visited by the inspectors. At the beginning of the year only 77 of them were registered, but it has been decided to register the others in order that more direct control may be had over them. Twenty-four fresh houses were put on the register last year, while two were taken off, leaving 99 at the end of the year.

CANAL BOATS.

Canal Boats.

At the end of the year there were 385 boats on the register, 26 having been put on during the year, and 17 struck off.

The inspections made during the year amounted to 823, and 85 breaches of the regulations were discovered. These were remedied without recourse to legal proceedings.

WORKSHOPS.

Workshops.

The visits to workshops numbered 10,704, being half as many again as in 1898. They resulted in many permanent improvements being made. For instance, at one large establishment at Nechells, six workshops were cleansed, five were provided with better ventilation by means of air bricks in the walls and extraction shafts on the roofs, while no less than sixteen additional water closets were provided. At another, an ashpit privy was discovered, the ashpit being used for the keeping of swine. The latter were at once removed, the ashpit privy was abolished, and four water closets were erected. In a third instance, three foul and defective water closets were pulled down and fourteen new ones were built.

The Workshop Inspector continues his systematic visiting of all the establishments on the register, in order that all may come periodically under his notice.

DAIRIES, COWSHEDS, AND MILKSHOPS.

Dairies and Milkshops.

The Milkshop Inspector paid 4,458 visits to milkshops and stores, and 182 to dairies. During the year 199 applications to be put on the milkshop register were received, of which 21 were refused. At the end of the year the register embraced 2,370 milkshops, 25 dairies, and 96 purveyors.

Ninety-five shops, cellars, and pantries were limewashed at the request of the Inspector. The sale of vinegar was stopped in 55 cases. Dirty vessels for holding milk were found in 47 instances, and dirty churns at railway stations in 20 instances.

Scarlet fever occurred at 10 places where milk is sold or stored, and typhoid fever at seven others. It is the rule in such cases to destroy the milk that is found on the premises and suspend the business until disinfection has been carried out.

Inspection of Cows and Cowsheds.

The Dairies, Cowsheds, and Milkshops Order of 1899 provides that the milk of a cow suffering from tubercular disease of the udder shall not be sold for human food, and in May last your Committee appointed Mr. J. Malcolm, F.R.C.V.S., to examine cows under the new order, and also to see that the regulations respecting cowsheds are complied with. Mr. Malcolm has supplied me with the following account of the work done since his appointment.

> "There are at the present time 62 cowsheds in the City, registered to contain 605 cows. 13 cowsheds have been removed from the register during the last six months, and 12 applications have been made for registration, 11 of which have been granted and one refused.
>
> "During the six months, June to December last, 464 visits were made to cowsheds.
>
> "Generally speaking the cowsheds have been kept in a satisfactory state, the majority of the cowkeepers readily agreeing to any required alterations, and it has only been necessary to issue notices in three instances, viz., two in connection with the insanitary condition of the sheds, and one for keeping cows in an unregistered shed. Limewashing was ordered and carried out in 64 cases.
>
> "All the dairy cows within the City have been periodically inspected, each cow as a rule being specially examined once a month. In every case where disease of the udder suggestive of tuberculosis exists, the use of the milk is provisionally discontinued. A careful physical examination of the udder is then made; the cow, with the owner's consent (which has only been refused in one or two instances), is tested with tuberculin, and the milk is examined for tubercle bacilli. The procedure adopted in examining the milk is as follows:—A sample of milk is taken from the affected quarter and centrifugalised. Preparations of the cream and sediment are then made after the Ziehe Nielsen method, and examined microscopically, when the tubercle bacilli, if present, can be demonstrated. Altogether 25 cows have been specially examined for tuberculosis of the udder, 12 of which have been condemned and 13 declared free. The sale of the milk of seven cows suffering from temporary disease of the udder, mostly of a suppurative character, was discontinued until recovery had taken place.
>
> "Since the veterinary inspection of the cows has been systematically adopted, the cowkeepers have exercised great care in purchasing cows, and are

making particular endeavours to secure only those free from disease of the udder. Greater attention is also paid to the cleanliness of the udder and teats of the cows, and to the hands of the milkers."

BAKEHOUSES.

Bakehouses.

The visits paid to bakehouses numbered 1,033, and limewashing was ordered in 71 instances. In October it was found that the occupier of one of the bakehouses was in the habit of using his bakehouse as a sleeping room; this is a flagrant breach of the regulations, and he was summoned and fined.

SLAUGHTERHOUSES.

Slaughter-houses.

These are inspected by the officers of the Markets and Fairs Committee, under the direction of Mr. F. H. Edwards. Last year 10,065 visits were paid to them, and in almost all cases they were found in good order. No summonses were necessary for breaches of the bye-laws.

In February an application was made for the renewal of the licence of a slaughterhouse in Hall Street. I visited the premises at the request of the Markets and Fairs Committee and found that the entrance to the premises was by a common entry only 34 inches wide, and the opening from this into the private yard of the slaughterhouse was exceedingly narrow and inconvenient. The amount of open space was very small, much of the original area of the yard being covered with flimsy outbuildings, which had apparently been used as stables, fasting pens, and cooking kitchens. Owing to the narrow entrance, the limited yard space, the frail character of the structures, and the populous condition of the neighbourhood, I considered the place quite unfit for a slaughterhouse, and reported accordingly.

I was also asked to visit another slaughterhouse in Ashted Row, which I found to be very old and dilapidated, the walls apparently being scarcely safe. It was badly situated in a thickly populated neighbourhood and at the top of a court containing a large number of houses. Animals passing to the slaughterhouse had to go through the court. On account of these conditions I reported that the premises were quite unfit for use as a slaughterhouse.

Towards the end of the year my opinion was asked in connection with the alteration and extension of a slaughterhouse in Smallbrook Street. In this case the extension was not being made with a view to any large increase in the number of animals slaughtered, but rather with the object of enabling the work to be done more efficiently and conveniently. Moreover the proposed extension did not reduce the amount of open space, as the ground was already occupied by old disused shopping. As the question was one of improvement and extension only, and not of the establishment of a new slaughterhouse, I did not feel that any strong objection could be urged against the proposal.

UNWHOLESOME FOOD.

Unwholesome Food.

The returns submitted by Mr. Edwards, Superintendent of Markets, show that 1,318 lots of bad meat were voluntarily handed over to the Officers of the Markets and Fairs Committee, and 23 lots were seized by them. The total weight destroyed was 228 tons. Nine persons were fined for exposing bad meat for sale, the fines amounting to £201; one other offender was sentenced to two months' imprisonment, with hard labour, for a similar offence.

Fourteen lots of bad fish, etc., were seized, and 473 surrendered, the total amount destroyed being 51 tons. Six persons were summoned, the fines amounting to £19.

Thirteen tons of bad fruit, etc., were destroyed.

WATER SUPPLY.

Corporation Water.

During the year I made the usual monthly analyses of the Corporation supply, and the results are given in Table XIV.

I also analysed 178 samples of water taken from the various streams and wells from which the Corporation supply is drawn.

Well Water.

Fourteen samples of well water were examined, chiefly from houses where infectious disease was present. During the year 13 wells were closed.

SMOKE NUISANCES.

Smoke.

In order to prevent undue fouling of the air by the emission of black smoke, 14,100 observations of factory chimneys were made, with the result that 117 persons were reported to have broken the regulations. Of these, 81 were cautioned and 35 were summoned and fined.

OFFENSIVE TRADES.

Bone Boiling Works.

During the year complaints were again received of nuisance arising from bone-boiling works in Farm Street. I visited the premises and reported that the works are situated almost entirely outside the City boundary in the Aston district, which is separated from the City by Hockley Brook.

> "Part of the bones are treated in a closed boiler under high pressure, which is situated in Aston, and part are boiled in a steam-heated vat of water at ordinary atmospheric pressure. Both the boilers are connected with the stack, so that the steam and vapours produced in them are conveyed away. The boiling vat only was in action at the time of my visit; it is only a few feet in length, and is situated partly in Aston and partly in the City. The arrangement for preventing nuisance from it in the works was acting perfectly.
>
> "There is a large deposit of boiled bones in the yard situated in Aston, and I understand that there is always a large quantity stored there; but though these certainly emit a disagreeable odour perceptible to anyone standing near them, I could detect no smell outside the premises. Of course I cannot say that a nuisance is not perceptible at times.
>
> "The men engaged in the business are remarkably healthy, and there is no evidence that the health of the residents in the immediate neighbourhood is injuriously affected by it. Diarrhœa was less prevalent than in the town generally.
>
> "Supposing that the stock of boiled bones is unavoidable, which I am informed it is, I see nothing in the arrangements which could be advantageously altered, the best methods of treating the bones being already in use; but it would be a great advantage if the accumulation of bones could be reduced, and this step might be properly urged upon the owner."

Horse-slaughtering Establishment.

Complaints were also received of a horse-slaughtering establishment at Nechells, upon which I had previously reported in 1880 and 1887, when I found the premises well kept, cleanly, and the appliances generally satisfactory. There was some little objection in 1880 to the escape of steam, but a good condenser was set up, and now no steam escapes except during the removal of the cooked horse-flesh from the boilers. There is, of course, a slight smell at the works, such as is inseparable from any slaughtering process.

Last year I was unable, as on previous occasions, to detect any nuisance in the neighbourhood surrounding the premises, and this latter experience was confirmed by the two Assistant Inspectors who had been engaged in that district. On one occasion I was present while the boiling of the horse-flesh was going on, and there was nothing in the process to which any serious objection could be raised. There is no reason why the boiling of horse-flesh should be more objectionable than the boiling of other flesh, and indeed it is well known that horse-flesh is a common article of food in several continental countries. The flesh is boiled, as a rule, immediately the animal is dressed, so that there is no time for decomposition, and as soon as it is cold it is despatched the same day to London, all boiling being over by mid-day.

With regard to the statement that equine matter finds its way into the sewers, and that a nauseating effluvium comes from the sewer openings, it appears that all that finds its way into the sewers is from such washing of the floors as takes place in every ordinary slaughterhouse in the town, as well as in the public abattoir. The bulk of the blood is caught in a vessel and so kept out of the sewers, and removed at short intervals. The offal is removed daily in a closed metallic vehicle to the Corporation yard at Montague Street, where it is destroyed by fire, and the manure of the horses in the establishment is also removed every day.

With regard to the death-rate of Adams Street, viz., 40 per 1,000, I would remark that there is an equally high mortality in several streets in other wards of the City, far removed from the knacker's yard.

The premises are swilled daily, and kept very clean, the floor of the slaughterhouse being well made with blue bricks and cement ; in the yard, however, the bricks are laid in the ordinary way, and I think, as a further means of rendering the surface free from taint, that the yard should be laid and grouted with cement. The washings from the floor of the slaughterhouse are passed through a well at the bottom of a manhole, and what little sediment takes place in this well is said to be removed once or twice a week, after which the drains and the well are flushed with a large head of water, accumulated for the purpose in a tank in the slaughterhouse. This well, accessible by a deep manhole, was neither large enough nor deep enough to efficiently arrest fragments of animal matter discharged from the slaughterhouse, and I thought it highly important that a much larger catchpit should be arranged at a much less depth, and at a point just outside the covered slaughter house.

I understand that a large number of the animals disposed of at this yard have been obtained from places outside the City, and even from towns at some considerable distance. It seems to me very undesirable to aggravate the conditions inseparably connected with an offensive trade by accepting work unconnected with the City. I consider that each district should provide its own means of disposal, and I am quite sure that any attempt to reverse the process and dispose of the City horses in an outside district would be strenuously resisted. But there can be no doubt that a knacker's yard for the City is an actual necessity, and that the point to which attention should be directed is the conduct of the business in the best possible manner.

ANALYTICAL WORK.

Miscellaneous Analyses.

Including those already alluded to under the heading Water Supply, I received during the year 388 samples of water, sewage and other articles not obtained under the Food and Drugs or Margarine Acts. The following table gives particulars of the various Committees for whom the articles were analysed :—

		Number of Samples.
Water Committee—		
Water, Sewage		182
Health Committee—		
Water	26	
Poudrette, Cloth, Sausage, etc....	55	
	—	81
Public Works Committee—		
Sewage, Water	57	
Cloth, Paint, etc.	51	
	—	108
Other Committees—		
Water, Paint, Walnuts, etc. ...		17
Total Samples		388

I remain,

Mr. Chairman and Gentlemen,

Your obedient Servant,

ALFRED HILL, M.D.,

Medical Officer of Health.

APPENDIX.

TABLE I.

MARRIAGES, BIRTHS, AND DEATHS IN THE FOURTEEN YEARS 1886–1899.

YEAR.	MARRIAGES.	BIRTHS.	DEATHS.				
			Males.	Females.	Total.	Of Infants under One Year old.	From Seven chief Zymotic Diseases.
1886	—	15,622	—	—	9,182	2,712	1,462†
1887	—	15,315	—	—	9,225	2,670	1,424†
1888	—	15,076	—	—	8,465	2,293	924†
1889	—	15,357	—	—	9,035	2,579	1,270†
1890	—	15,487*	—	—	10,329*	2,798*	1,391*†
1891	—	16,166	5,175	4,902	10,077	2,673	976†
1892	4,322	16,026	4,934	4,708	9,642	2,664	1,279
1893	4,103	15,881	5,315	5,130	10,445	3,146	1,520
1894	4,241	15,505	4,659	4,287	8,946	2,539	1,237
1895	4,442	16,014	5,154	4,708	9,863	2,910	1,350
1896	5,024	16,582*	5,354*	5,051*	10,405*	3,265*	1,846*
1897	5,515	16,771	5,572	5,096	10,668	3,594	1,909
1898	5,321	17,289	5,152	4,782	9,936‡	3,287	1,400
1899	5,337	17,609	5,521	5,003	10,524§	3,398	1,490

* 53 weeks. † Membranous Croup not included. ‡ 2 sex unknown.

§ The number of deaths has been corrected as far as possible by excluding those of persons not belonging to Birmingham who died in hospitals in the city, and by including the deaths of Birmingham citizens who died in workhouses and asylums outside the city boundary.

TABLE II.

POPULATION, MARRIAGE-RATES, BIRTH-RATES, AND DEATH-RATES IN THE FOURTEEN YEARS 1886–1899.

YEAR.	Estimated Population.	Persons to an Acre.	Marriage-rate per 1,000 persons living.	Birth-rate per 1,000 persons living.	Death-rate per 1,000 persons living.	Death-rate in Infants under One Year per 1,000 Births.	Death-rate from Seven chief Zymotic Diseases.
1886	458,110	36·1	—	34·2	20·1	174	3·2*
1887	462,251	36·4	—	33·2	20·0	174	3·1*
1888	466,430	36·7	—	32·4	18·2	152	2·0*
1889	470,646	37·0	—	32·7	19·2	168	2·7*
1890	474,900	37·4	—	32·1	21·4	181	2·9*
1891	479,193	37·7	—	33·8	21·1	165	2·0*
1892	483,526	38·1	17·9	33·2	20·0	166	2·7
1893	487,897	38·4	16·9	32·6	21·5	198	3·1
1894	492,301	38·7	17·3	31·6	18·2	164	2·5
1895	496,751	39·1	17·9	32·3	19·9	182	2·7
1896	501,241	39·5	20·0	32·5	20·4	197	3·6
1897	505,772	39·8	21·9	33·2	21·1	214	3·8
1898	510,343	40·2	20·9	34·0	19·5	190	2·8
1899	514,956	40·5	20·8	34·3	20·5	193	2·9
Average of 5 years prior to 1899.	501,282	39·5	19·6	32·7	19·8	189	3·1

* Membranous Croup not included.

1.—Population at Census 1891, 478,116.
2.—Number of Inhabited Houses at Census 1891, 95,516.
3.—Average number of Persons in each House at Census 1891, 5·0
4.—Area of the City, in acres, 12,705.

TABLE IV.

Deaths from the Principal Zymotic Diseases in the Fourteen Years, 1886 to 1899.

		1886.	1887.	1888.	1889.	1890.*	1891.	1892.	1893.	1894.	1895.	1896.*	1897.	1898.	Annual Average of 5 years prior to 1899.	1899.
	Smallpox	0	2	0	0	0	7	0	70	171	8	4	0	0	37	0
	Measles	402	251	202	214	354	107	340	48	316	133	310	414	182	271	196
	Scarlet Fever ...	42	37	40	162	218	95	68	68	75	133	154	95	47	101	29
	Diphtheria	80	67	48	59	66	43	67	43	50	163	246	130	114	141	118
	Membranous Croup	?	?	?	?	?	?	35	40	41	51	47	30	18	37	29
	Whooping Cough ...	99	403	248	297	224	303	285	321	219	173	386	227	256	252	168
Fever	Typhus	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	Enteric or Typhoid	63	77	64	45	64	80	39	94	105	82	108	89	113	99	119
	Continued ..	6	8	5	4	2	1	2	8	4	2	2	0	2	2	0
	Diarrhœa	770	579	317	489	463	340	443	828	256	605	589	923	668	608	831

* 53 weeks.

TABLE V.

Deaths from certain Causes in the Years 1891–1899.

DEATHS FROM	1891	1892	1893	1894	1895	*1896	1897	1898	1899
Cancer	324	293	313	303	332	346	376	342	386
Phthisis	815	716	775	630	718	694	679	718	841
Other Tubercular Diseases	266	265	270	229	287	258	258	236	237
Premature Birth	295	345	359	346	376	384	425	372	367
Old Age	477	348	541	388	510	430	482	475	535
Bronchitis, Pneumonia, and Pleurisy ...	2,469	2,100	2,188	1,811	1,770	1,838	1,870	1,626	1,831
Diseases of Nervous System	902	864	915	861	931	989	939	963	1,013
Diseases of Heart	673	684	584	586	613	628	641	674	631
Diseases of Digestive System	570	597	712	582	772	828	1,027	1,021	1,053
Diseases of Urinary System	222	225	256	215	207	230	234	230	249
Accident or Negligence	356	292	296	280	329	279	326	327	331
Debility, Atrophy, Inanition, and Marasmus	593	592	750	615	658	677	623	639	614

* 53 weeks.

TABLE VI.

Birth-rates and Death-rates in 33 Great Towns during 1899. *(Extracted from the Registrar General's Annual Summary.)*

Cities and Boroughs.	Birth-Rate.	Death Rates per 1000 Persons living from									Deaths under 1 Year to 1000 Births.	Percentage to Total Deaths.		Cities and Boroughs.
		All causes.	Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Fever.	Diarrhœa.		Inquest Cases.	Uncertified Causes of Death.	
33 Towns - -	30·2	20·2	2·81	0·01	0·46	0·13	0·40	0·38	0·22	1·21	181	7·6	1·2	33 Towns.
London - - -	29·4	19·8	2·48	0·00	0·47	0·09	0·43	0·38	0·18	0·93	167	9·2	0·6	London
West Ham - -	29·7	16·7	3·50	—	0·68	0·06	0·61	0·34	0·26	1·55	197	6·6	1·9	West Ham.
Croydon - -	25·1	15·0	1·56	—	0·14	0·02	0·13	0·31	0·07	0·89	154	8·5		Croydon.
Brighton - -	24·9	19·0	2·50	—	0·01	0·08	0·50	0·15	0·20	1·56	173	6·3	0·4	Brighton.
Portsmouth -	26·2	19·7	3·51	—	0·27	0·11	0·64	0·33	0·40	1·76	197	6·3	0·9	Portsmouth.
Plymouth -	29·8	21·7	1·93	—	0·11	0·03	0·20	0·51	0·07	1·01	190	6·0	0·3	Plymouth
Bristol - - -	29·2	18·2	1·86	—	0·13	0·04	0·10	0·37	0·11	1·11	158	8·4	0·6	Bristol.
Cardiff -	28·6	15·4	2·06	—	0·06	0·02	0·33	0·64	0·10	0·91	184	8·0	0·7	Cardiff.
Swansea - -	27·7	18·1	2·67	—	0·14	0·11	1·36	0·27	0·08	0·71	166	6·7	1·3	Swansea.
Wolverhampton	35·3	21·8	2·56	—	0·02	0·07	0·19	0·25	0·52	1·51	184	8·2	0·5	Wolverhampton.
Birmingham* -	34·3	20·8	2·96	—	0·38	0·06	0·29	0·32	0·24	1·67	191	5·7	2·1	Birmingham.*
Norwich - -	29·1	17·3	2·40	—	0·04	0·16	0·35	0·41	0·18	1·26	179	5·7	0·9	Norwich.
Leicester - -	29·4	17·7	3·31	—	1·13	0·20	1·06	0·42	0·14	1·36	195	7.0	2·2	Leicester.
Nottingham - -	28·9	20·0	3·33	—	0·58	0·23	0·13	0·23	0·48	1·68	210	5·6	1·0	Nottingham
Derby - - - -	25·1	16·9	1·65	—	0·22	0·24	0·08	0·08	0·14	0·89	162	8·8	—	Derby.
Birkenhead	29·9	19·2	2·65	—	0·44	0·06	0·21	0·77	0·43	0·74	186	6·9	0·7	Birkenhead
Liverpool -	35·6	26·4	3·77	0·00	0·50	0·26	0·34	0·49	0·31	1·87	198	6·1	3·8	Liverpool.
Bolton - -	29·9	19·9	3·18	—	0·61	0·22	0·09	0·27	0·35	1·64	181	8·5	0·4	Bolton.
Manchester -	22·6	24·6	3·92	—	1·30	0·08	0·15	0·12	0·14	1·83	206	7·3	0·8	Manchester.
Salford	33·9	23·8	4·32	—	0·97	0·23	0·34	0·46	0·35	1·97	209	5·7	0·7	Salford.
Oldham - - -	24·8	20·5	2·16	—	0·32	0·31	0·16	0·36	0·13	0·88	198	5·4	0·2	Oldham.
Burnley - -	25·3	19·6	4·35	—	0·78	0·67	0·23	0·66	0·22	1·79	269	5·1	1·5	Burnley.
Blackburn - -	27·0	19·1	2·67	—	0·31	0·17	0·53	0·39	0·30	0·97	189	5·1	3·5	Blackburn.
Preston -	30·1	22·8	3·93	—	0·38	0·09	0·33	0·50	0·33	2·30	255	3·7	3·1	Preston.
Huddersfield -	23·0	16·2	1·79	—	0·11	0·06	0·05	0·55	0·20	0·82	152	3·8	2·0	Huddersfield.
Halifax	23·1	18·3	1·50	—	0·13	0·27	0·15	0·23	0·25	0·47	159	4·2	3·7	Halifax.
Bradford - -	23·4	18·4	2·33	—	0·32	0·45	0·11	0·28	0·20	0·97	181	6·2	0·9	Bradford.
Leeds - - -	30·6	19·1	2·79	—	0·37	0·15	0·78	0·38	0·17	0.94	171	8·2	2·6	Leeds.
Sheffield	31·6	22·2	4·39	—	0·61	0·25	1·28	0·16	0·51	1·58	194	4·0	2·9	Sheffield.
Hull - - -	31·3	19·3	3·66	0·60	0·51	0·17	0·12	0·62	0·18	1·46	175	7·9	2·1	Hull.
Sunderland - -	35·7	21·5	2·50	—	0·28	0·25	0·06	0·39	0·38	1·14	175	6·3	1·8	Sunderland.
Gateshead -	36·6	18·8	2·09	—	0·20	0·12	0·08	0·13	0·14	1·12	177	4·2	0·7	Gateshead.
Newcastle -	31·4	20·6	1·82	—	0·35	0·11	0·13	0·38	0·10	0·75	193	8·2	0·9	Newcastle.

* Including paupers belonging to Birmingham, who died in Workhouses and Asylums outside the City.

TABLE VII.

NUMBER OF CASES REPORTED UNDER THE INFECTIOUS DISEASE (NOTIFICATION) ACT, 1889, DURING EACH WEEK OF THE YEAR 1899.

Week.		Smallpox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Typhus Fever.	Typhoid Fever.	Simple Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	TOTAL.
Number.	Date of ending.												
	1899.												
1	January 7th	...	18	9	...	...	16	...	...	...	...	19	62
2	" 14th	...	21	12	3	...	7	...	...	1	...	16	60
3	" 21st	...	41	20	...	...	9	1	...	1	...	14	86
4	" 28th	...	21	8	...	...	8	...	...	1	...	18	56
5	February 4th	...	23	12	3	...	12	...	...	...	...	10	60
6	" 11th	...	13	13	4	...	12	...	...	1	...	22	65
7	" 18th	...	16	19	1	...	17	...	..	1	...	13	67
8	" 25th	...	11	14	3	...	13	...	...	..	...	10	51
9	March 4th	...	16	10	...	...	14	..	...	...	...	11	51
10	" 11th	...	21	14	1	...	9	...	...	2	...	11	58
11	" 18th	...	24	7.	2	...	13	...	...	...	...	13	59
12	" 25th	...	23	8	...	...	6	...	...	...	...	9	46
13	April 1st	...	16	15	...	...	11	...	...	1	...	8	51
14	" 8th	...	18	7	...	...	9	...	...	...	...	5	39
15	" 15th	...	18	4	...	...	9	...	...	1	...	18	50
16	" 22nd	...	11	8	1	...	12	4	...	...	...	8	44
17	" 29th	...	13	10	1	..	11	...	...	1	...	14	50
18	May 6th	...	26	5	1	...	8	...	...	...	...	10	50
19	" 13th	...	13	7	...	...	4	...	...	...	...	15	39
20	" 20th	...	16	15	...	...	8	...	...	2	...	7	48
21	" 27th	...	9	11	...	...	1	1	...	...	...	12	34
22	June 3rd	...	14	12	2	...	7	..	...	...	...	13	48
23	" 10th	...	29	6	1	...	9	...	...	...	...	10	55
24	" 17th	...	21	17	4	...	4	...	...	...	...	6	62
25	" 24th	...	24	18	...	...	9	2	...	1	...	10	64
26	July 1st	..	15	16	1	...	10	...	...	...	...	9	51
27	" 8th	...	22	11	4	...	2	...	...	1	...	9	49
28	" 15th	...	19	7	1	...	5	...	...	1	...	9	42
29	" 22nd	...	25	18	...	...	5	...	...	...	...	13	61
30	" 29th	...	28	20	...	...	6	..	...	...	..	6	60
31	August 5th	...	29	17	...	...	7	...	...	1	...	10	64
32	" 12th	...	26	14	3	...	5	...	...	1	...	8	57
33	" 19th	...	27	16	1	...	15	...	...	...	...	11	70
34	" 26th	...	30	15	...	...	8	...	...	1	...	11	65
35	September 2nd	...	31	8	...	...	5	...	...	...	...	7	51
36	" 9th	...	24	14	1	...	13	...	...	...	...	10	62
37	" 16th	...	24	10	1	...	13	...	...	...	...	13	61
38	" 23rd	...	31	17	1	...	8	...	...	...	...	14	71
39	" 30th	...	29	20	...	...	22	1	...	...	...	16	88
40	October 7th	..	48	12	3	...	13	...	...	1	...	7	84
41	" 14th	...	46	18	1	...	14	...	...	...	...	13	92
42	" 21st	...	35	18	1	..	24	...	...	1	...	10	89
43	" 28th	...	36	17	3	...	33	1	...	...	...	18	108
44	November 4th	...	27	7	...	...	29	2	...	1	...	17	83
45	" 11th	...	33	12	2	...	38	...	...	1	...	15	101
46	" 18th	...	27	10	...	...	38	...	...	...	...	12	87
47	" 25th	...	34	18	1	...	46	...	...	...	...	19	118
48	December 2nd	...	25	7	...	...	23	1	...	...	..	24	80
49	" 9th	...	28	21	1	...	51	...	...	3	...	12	116
50	" 16th	...	24	17	2	...	38	...	...	2	...	8	91
51	" 23rd	...	21	12	1	...	44	...	...	...	...	16	94
52	" 30th	...	25	12	...	...	26	...	...	3	...	10	76
	TOTALS ...	...	1255	665	55	...	779	13	...	30	...	629	3426

Cases removed to City Hospital :—Smallpox, 0 ; Scarlet Fever, 1,052.

TABLE VIII.

Cases of Infectious Disease Notified during the Year ending December 30th, 1899.

Classified according to ages, wards, and institutions.

DISEASES	AGES.								WARDS.																		Institutions.	CITY.
	0 to 1.	1 to 5.	5 to 10.	10 to 15.	15 to 25.	25 to 45.	45 to 65.	65 and up.	Rotton Park.	All Saints'.	Ladywood.	St. Paul's.	St. George's.	St. Stephen's.	St. Mary's.	St. Bartholomew's.	Market Hall.	St. Thomas's.	St. Martin's.	Edgbaston and Harborne.	Deritend.	Bordesley.	Duddeston.	Nechells.	Balsall Heath.	Saltley.		
SMALLPOX	..	..	..	.	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
SCARLET FEVER ..	12	407	454	186	150	45	1	..	194	95	74	21	25	28	17	69	14	38	71	75	42	173	47	91	69	94	18	1255
DIPHTHERIA	8	186	187	84	108	76	15	1	69	33	49	13	32	25	11	11	4	19	26	52	17	115	13	28	116	28	4	665
MEMBRANOUS CROUP.	4	42	8	1	..	..	..	..	3	7	2	2	9	5	7	2	1	..	2	..	3	2	2	3	3	2	..	55
TYPHUS FEVER.. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..
TYPHOID FEVER ..	2	38	127	112	259	207	31	3	59	50	36	16	46	99	41	48	18	24	23	33	32	39	39	86	37	48	5	779
SIMPLE CONTINUED FEVER	..	4	4	2	2	..	1	..	7	..	..	..	1	..	..	5	..	..	..	..	..	..	..	..	..	..	..	13
RELAPSING FEVER ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
PUERPERAL FEVER ..	..	..	..	..	13	17	..	..	5	1	3	..	.	3	..	1	..	1	3	..	2	2	3	..	3	3	..	30
CHOLERA..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
ERYSIPELAS	22	32	41	27	86	222	147	52	57	47	27	21	23	27	31	61	8	15	24	37	20	73	32	32	32	53	9	629
TOTALS	48	709	821	412	618	567	195	56	394	233	191	73	136	187	107	197	45	97	149	197	116	404	136	240	260	228	36	3426

TABLE IX.

CASES OF INFECTIOUS DISEASE NOTIFIED DURING EACH OF THE EIGHT YEARS, 1892–1899.

	1892.	1893.	1894.	1895.	1896.*	1897.	1898.	1899.	Average of five years, prior to 1899.
SMALLPOX	27	979	2,074	100	14	0	0	0	438
SCARLET FEVER ...	1,418	1,614	1,788	2,964	3,389	1929	1,320	1,255	2,278
DIPHTHERIA	456	322	316	640	1,100	655	650	665	672
MEMBRANOUS CROUP	77	65	90	101	94	58	39	55	76
TYPHUS FEVER ...	0	4	0	0	0	1	0	0	0
TYPHOID FEVER ...	260	489	511	436	483	533	637	779	520
SIMPLE CONTINUED FEVER	5	25	7	4	6	1	12	13	6
RELAPSING FEVER ...	1	0	0	0	1	0	0	0	0
PUERPERAL FEVER ...	40	54	42	24	31	17	24	30	28
CHOLERA	0	0	0	0	0	0	0	0	0
ERYSIPELAS	569	852	772	818	782	585	637	629	719
TOTAL ...	2,853	4,404	5,600	5,087	5,900	3,779	3,319	3,426	4,737

* 53 weeks.

TABLE X.

Temperature of the Air and Ground, Rainfall, Sunshine, and Wind, in each Month of the Year 1899.

Observed at the Birmingham and Midland Institute Observatory, Edgbaston, by Mr. Alfred Cresswell.

MONTH.	TEMPERATURE OF THE AIR.						TEMPERATURE OF THE GROUND.		HOURS OF SUNSHINE.		RAINFALL IN INCHES.		DAYS ON WHICH RAIN FELL.	MILES OF WIND.	
	Highest in the shade.		Lowest in the shade.		Mean for the month.		Highest 1 foot deep.	Highest 4 feet deep.							
	1899.	Above or below the previous highest. *	1899.	Above or below the previous lowest. *	1899.	Above or below the average. *			1899.	Above or below the average. *	1899.	Above or below the average. *		1899.	Above or below the average. *
January	52·8	− 5·2	28·5	+ 17·7	40·2	+ 3·7	46·0	47·8	43	+ 7	3·44	+ 1·64	23	11918	+ 2118
February ..	56·8	− 5·1	26·1	+ 18·1	39·8	+ 2·3	45·0	45·6	74	+ 19	1·99	+ 0·79	10	8670	− 664
March ..	59·0	− 5·8	22·0	+ 0·7	40·1	− 0·2	44·6	45·0	117	+ 26	1·02	− 0·64	8	9096	− 1330
April	65·3	− 13·7	31·8	+ 4·8	45·4	+ 0·5	48·1	45·8	95	− 17	2·40	+ 0·74	19	10004	+ 990
May	71·0	− 6·6	33·8	+ 2·8	49·1	− 2·1	52·0	47·9	128	− 16	2·20	+ 0·20	15	8274	− 840
June	79·4	− 3·4	42·4	+ 4·1	58·8	+ 1·1	60·0	52·9	211	+ 64	3·28	+ 1·31	9	6680	− 1228
July	81·8	− 2·8	48·0	+ 8·5	62·3	+ 3·0	63·6	55·6	181	+ 50	1·10	− 1·09	10	8095	− 476
August ..	84·2	− 1·4	49·1	+ 7·9	63·6	+ 5·0	63·6	57·8	222	+ 94	1·08	− 1·82	8	7840	− 922
September ..	81·4	− 1·4	38·6	+ 5·6	55·4	+ 0·1	61·7	57·8	130	+ 16	2·80	+ 0·90	16	9580	+ 1438
October ..	63·7	− 6·3	34·4	+ 6·5	47·7	+ 0·7	51·7	54·4	101	+ 31	2·37	− 0·18	8	7594	− 1367
November ..	61·2	− 0·4	28·1	+ 4·6	46·6	+ 3·8	51·2	51·8	30	− 7	1·49	− 0·83	10	9561	+ 126
December ..	54·5	− 1·5	17·0	+ 2·5	35·7	− 2·6	47·0	49·9	18	+ 15	1·95	− 0·27	16	7760	− 2461

* In the twelve years 1887-1898.

TABLE XI.

Temperature and Rainfall in each Month and Year from 1887 to 1899.

MONTH.	TEMPERATURE.														RAINFALL.													
	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	Average for 12 years 1887-1898.	1899	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	Average for 12 years 1887-1898.	1899
	°	°	°	°	°	°	°	°	°	°	°	°	°	°														
January ...	35·2	37·2	36·8	41·1	34·4	35·2	35·1	36·7	30·6	39·9	33·7	42·2	36·5	40·2	1·19	0·50	0·59	2·80	1·92	1·98	1·75	1·61	3·92	1·15	1·89	0·83	1·80	3·44
February	38·3	34·8	36·5	36·8	40·2	37·3	39·2	39·9	27·5	39·1	41·5	38·9	37·5	39·8	0·62	0·11	1·66	0·52	0·69	1·41	2·56	2·05	0·32	0·56	2·54	1·47	1·20	1·99
March ...	37·6	36·9	39·5	42·6	38·8	35·6	45·3	42·6	40·4	43·5	42·8	38·1	40·3	40·1	1·38	2·41	2·64	1·47	1·22	0·85	0·50	1·05	1·91	2·68	3·14	0·63	1·66	1·02
April ...	41·6	42·1	43·7	44·0	42·4	44·9	49·6	48·5	45·5	47·6	43·5	46·0	44·9	45·4	1·47	1·89	2·91	0·69	2·13	1·23	0·33	1·62	2·37	1·33	2·02	1·85	1·66	2·40
May ...	47·6	51·1	54·3	52·7	48·4	53·2	54·5	47·1	53·9	52·9	49·8	49·0	51·2	49·1	1·88	0·83	4·00	2·12	3·38	1·85	2·08	2·01	0·82	0·21	1·20	2·62	2·00	2·20
June ...	59·9	55·2	59·0	57·1	57·4	56·5	59·0	55·6	58·0	60·7	58·4	55·7	57·7	58·8	2·17	2·16	0·49	1·62	3·27	2·74	1·08	2·16	0·89	1·91	4·13	1·06	1·97	3·28
July ...	63·9	55·9	59·0	57·6	58·0	56·8	61·0	59·8	58·5	61·1	61·0	58·8	59·3	62·3	0·93	5·11	1·53	2·39	2·08	2·52	1·64	3·36	3·25	1·25	0·95	1·29	2·19	1·10
August ...	60·2	57·4	58·6	57·5	56·9	59·2	63·2	56·4	59·2	56·8	60·1	57·9	58·6	63·6	2·38	3·27	2·92	3·74	3·56	3·73	2·25	2·12	2·75	1·74	3·81	2·57	2·90	1·08
September	52·5	53·7	55·1	58·6	57·2	54·0	54·8	52·1	59·9	54·4	52·9	58·2	55·3	55·4	2·31	1·20	2·17	1·26	1·63	2·97	1·72	1·70	0·45	4·34	2·48	0·64	1·90	2·80
October ...	44·4	46·6	46·8	49·2	48·4	44·5	48·8	47·2	44·8	43·3	49·1	51·0	47·0	47·7	2·11	0·32	3·19	1·56	5·36	2·84	2·45	3·48	2·81	2·50	1·31	2·74	2·55	2·37
November	40·1	45·5	44·0	42·5	41·3	43·2	39·9	45·1	44·6	38·9	44·6	43·8	42·8	46·6	1·78	4·41	1·04	3·22	2·74	1·79	1·38	2·48	3·41	1·26	1·96	2·51	2·32	1·49
December	37·3	40·3	37·9	29·8	39·2	34·7	39·5	40·1	38·0	38·1	39·8	44·4	38·3	35·7	1·58	2·41	1·80	0·71	3·16	1·69	3·02	1·88	1·99	3·34	2·78	2·24	2·22	1·95
Year ...	46·5	46·4	47·6	47·5	46·9	46·3	49·2	47·6	46·7	48·0	48·1	48·7	47·4	48·7	19·80	24·62	24·94	22·10	31·14	25·60	20·76	25·52	24·89	22·27	28·21	20·45	24·37	25·12

TABLE XII.

SUMMARY OF NUISANCES ABATED AND OTHER WORK DONE DURING THE YEAR 1899.

(RETURNS MADE BY MR. PARKER, *Inspector of Nuisances.*)

DWELLING HOUSES.

No. of Houses cleansed (walls and ceilings)	2,564
,, Houses cleansed (floors, bedding, &c.)	11
,, Houses repaired	1,927
,, Houses closed under the Housing of the Working Classes Act	12
,, Houses demolished under the Housing of the Working Classes Act	0
,, Houses put in habitable condition under the Housing of the Working Classes Act	45
,, Houses re-opened on rescinding order under the Housing of the Working Classes Act	2
,, Houses closed under the Public Health Act	119
,, Houses demolished under the Public Health Act	18
,, Houses put in habitable condition under the Public Health Act	3
,, Houses provided with better ventilation	39
,, Cases of overcrowding remedied	110
,, Accumulations of water in cellars removed	244
,, Rain-water Spouts repaired	321

CLOSETS.

No. of Ashpit Privies converted to water closets	1,222
,, Pan Privies converted to water closets	199
,, Privies and Closets limewashed	776
,, Pan Privies cleansed by Staff	80,214
,, Tub Sheds cleansed by Staff	34,636
,, Water Closets repaired...	602
,, Pan Privies repaired	446
,, Ash Sheds repaired	341
,, Additional Water Closets provided	124
,, Additional Ash Tubs provided	609
,, Soilpipes removed from inside houses	6
,, Urinals repaired or reconstructed	311

DRAINAGE.

No. of	Drains relaid or repaired	663
,,	Drains opened and cleansed	2,420
,,	Drains efficiently trapped	1,422
,,	Drains in cellars disconnected from the sewer or abolished	81
,,	Sink Drains disconnected from the sewer	87
,,	Sink Bend Pipes repaired or affixed	158
,,	Premises supplied with additional drains	148
,,	Smoke Tests applied to drains	198
,,	Defects discovered thereby	401
,,	Drains in Stables removed	14
,,	Drain Traps cleansed by the Staff	51,804
,,	Surface Drains cleansed by the Staff	9,640

OTHER NUISANCES ABATED AND WORK DONE.

No. of	Back Yards paved	347
,,	Back Yards repaired	592
,,	Courts cleansed by Staff	2,519
,,	Courts cleansed by Tenants (under notice)	161
,,	Wash-houses repaired	249
,,	Premises from which fowls have been removed	360
,,	Nuisances from swine and swine styes abated	37
,,	Accumulations of wash, manure, etc., removed	783
,,	Dangerous Premises reported to the City Surveyor's Department	893
,,	Defective Water Fittings reported to the Water Department	819
,,	Premises supplied with Corporation Water	2
,,	Disused Wells filled up	7
,,	Manure Receptacles provided	15
,,	Over-flow Pipes disconnected from drains	9
,,	Other Nuisances abated	5

DISINFECTION.

No. of	Houses disinfected after Smallpox	0
,,	,, ,, ,, Scarlet Fever	1,050
,,	, ,, ,, Diphtheria and Croup	297
,,	,, ,, ,, Typhoid Fever	312
,,	,, ,, ,, Puerperal Fever	6
,,	,, ,, ,, Consumption	22
,,	,, ,, ,, Measles	60
,,	Beds and Mattresses disinfected	2,551
,,	Sheets, Blankets, and Counterpanes disinfected	4,409
,,	Pillows and Bolsters disinfected	3,615
,,	Garments disinfected	4,929
,,	Carpets disinfected	406
,,	other Articles disinfected	1,379
,,	Filthy Houses disinfected	14

SMOKE NUISANCES.

No. of Observations made by the Inspectors	14,100
,, Manufacturers Reported for breaking the regulations	117

LODGING HOUSES.

No. of Visits by day	13,169
,, Visits by night	934
,, Persons found occupying the Houses	21,725
,, Contraventions remedied	1
,, Keepers summoned	2

CANAL BOATS.

No. of Boats registered	26
,, Boats inspected	823
,, Contraventions remedied	86

WORKSHOPS.

No. of Visits to Workshops	10,704
,, Workshops limewashed	1,317
,, Sanitary Defects remedied	792

DAIRIES, COW SHEDS, AND MILKSHOPS.

No. of Visits to Dairies	182
,, Visits to Cow Sheds	1,899
,, Visits to Milk Shops and Milk Stores	4,458
,, Contraventions remedied	217

BAKEHOUSES.

No. of Visits to Bakehouses	1,033
,, Bakehouses limewashed	71
,, Sanitary Defects remedied	4

UNWHOLESOME FOOD.

(Return made by Mr. Edwards, *Superintendent of the Markets.)*

Voluntary Surrenders of Bad Meat	1,318
Seizures of Bad Meat	23
Weight Destroyed	228 tons
Voluntary Surrenders of Bad Fish, &c.	473
Seizures of Bad Fish, etc.	14
Weight destroyed	51 tons
Weight of Bad Fruit, etc., destroyed	13 tons

CONTAGIOUS DISEASES (ANIMALS) ACT.

(Return made by Mr. Edwards, *Superintendent of the Markets.)*

No. of Visits to Slaughter Houses	10,065
,, ,, Railway Stations	966
,, ,, Cow Houses	27

TABLE XIII.

RETURN FOR THE PERIOD 1ST JULY, 1898, TO 30TH JUNE, 1899, RESPECTING THE VACCINATION OF CHILDREN WHOSE BIRTHS WERE REGISTERED IN THE CITY DURING THE SAID PERIOD.

	Number of Births returned in the "Birth List Sheets" as Registered.	Number of these Births duly entered in Columns 10, 11, and 13 of the "Vaccination Register" (Birth List Sheets), viz.:				Exempt through Conscientious Objection.	Number of these Births which remained unentered in the "Vaccination Register" on account (as shown by Report Book) of			Number of these Births remaining neither duly entered in the "Vaccination Register" (cols. 3, 4, 5, and 6 of this Return) nor temporarily accounted for in the "Report Book" (cols. 8, 9, and 10 of this Return).
		Col. 10.	Col. 11.		Col. 13.					
		"Successfully Vaccinated."	"Insusceptible of Vaccination."	"Had Smallpox."	"Dead, Unvaccinated."		Postponement by Medical Certificate.	Removal to Districts the Vaccination Officer of which has been duly apprised.	Removal to places unknown or which cannot be reached; and cases not having been found.	
1	2	3	4	5	6	7	8	9	10	11
Birmingham Parish ...	8,550	5,527	64	—	1,267	36	108	94	868	586
Aston Union (within the City)	7,103	4,648	65	—	1,060	32	99	88	582	529
King's Norton Union (within the City) ...	2,485	1,781	37	—	213	28	65	48	176	137
Total	18,138	11,956	166	—	2,540	96	272	230	1,626	1,252

TABLE XIV.—WATER: RESULTS OF ANALYSIS EXPRESSED IN PARTS PER 100,000.

Date of Receipt of Sample.	DESCRIPTION.	Temperature, C.	Total Solid Matter.	Organic Carbon.	Organic Nitrogen.	Albuminoid Ammonia.	Free Ammonia.	Nitrogen as Nitrates and Nitrites.	Oxygen Absorbed in 4 hours, at 27°C (80° F.)	Previous Sewage Contamination (Estimated).	Chlorine.	Hardness Temporary.	Hardness Permanent.	Hardness Total.	REMARKS.
1899.	**CORPORATION SUPPLY.**														
Jan. 18th	15 Court, Benacre Streeet ...	5·6	30·4	·35	·04	·016	·002	·20	·23	1,700	1·8	5·0	13·0	18·0	Very slightly turbid; yellowish green
Feb. 16th	Lodge Terrace, 47 and 48, Lodge Road	8·9	31·6	·17	·02	·007	·001	·35	·10	3,190	2·7	10·0	13·5	23·5	Clear; pale green
Mar. 11th	Rear of 214 and 215, Monument Road	6·7	32·8	·16	·04	·012	·001	·35	·08	3,190	2·8	7·0	10·5	17·5	Clear; pale green
April 14th	11 Court, back of 81 and 82, Great Barr Street	8·3	28·0	·28	·03	·010	·000	·15	·12	1,180	1·9	6·5	11·0	17·5	Very slightly turbid; pale green
May 15th	Raglan Terrace, 194 and 196, Edwardes Street	10·0	35·2	·16	·03	·008	·000	·25	·19	2,180	2·7	8·5	13·5	22·0	Clear; pale green
June 12th	Court rear of 277 and 279, High Street, Harborne ...	16·1	33·2	·18	·03	·006	·000	·20	·15	1,680	2·2	5·5	12·5	18·0	Clear; pale green
July 14th	14 Court, Rea Street	20·0	34·0	·29	·03	·013	·001	·05	·18	190	2·2	5·0	12·0	17·0	Slightly turbid: pale green
Aug. 15th	Court rear of 164 and 165, Grange Road	18·3	31·2	·14	·03	·007	·001	·25	·10	2,190	3·3	7·5	10·5	18·0	Very slightly turbid; pale green
Sept. 8th	2 Court, High Street, Harborne	17·8	26·0	·30	·04	·012	·000	·15	·08	1,180	2·3	0·5	11·0	11·5	Very slightly turbid; pale green
Oct. 13th	67 Court, Cromwell Street ...	10·0	30·4	·36	·04	·013	·000	·10	·20	680	1·9	5·5	15·0	20·5	Very slightly turbid; pale green
Nov. 13th	Rear of 24 and 25, Bagot St....	8·9	32·0	·31	·03	·020	·001	·25	·18	2,190	2·1	5·5	15·0	20·5	Clear; pale green
Dec. 13th	Spring Grove, Heath Street ..	5·5	37·2	·20	·03	·008	·000	·30	·11	2,680	2·7	9·0	17·5	26·5	Clear; pale green
	Average Results ...1899	11·3	31·8	·24	·03	·011	·001	·22	·14	1,850	2·4	6·3	12·9	19·2	
	,, ,, ...1898	11·2	32·2	·21	·04	·010	·001	·27	·10	2,350	2·3	7·5	14·2	21·7	
	,, ,, ...1897	10·4	32·0	·28	·04	·011	·000	·28		2,480	2·3	8·9	13·0	21·9	
	,, ,, ...1896	10·7	32·0	·25	·04	·012	·001	·29		2,550	2·4	9·0	13·0	22·0	
	,, ,, ...1895	10·3	31·9	·21	·05	·018	·000	·22		1,890	2·3	9·2	13·7	22·9	

WELL WATERS.

															°	
Jan.	2nd	*13 to 16, Alfred Street, Sparkbrook	...	144·0	...	...	·013	·000	4·8	·09	48,000	8·2	...	...	100·0	Clear ; pale green
Feb.	1st	*25 to 31, High Street, Harborne	...	83·0	...	...	·016	·100	4·8	·08	48,500	8·7	...	...	39·0	Very slightly turbid : grey
,,	22nd	Almshouses, High Street, Harborne	...	84·0	...	...	·009	·000	4·7	·05	47,000	7·1	...	...	49·0	Very slightly turbid ; grey
April	14th	149, Brighton Road	...	168·0	...	...	·020	·065	7·7	·15	77,000	17·6	...	...	97·0	Very slightly turbid : grey
,,	21st	146, 148, 150, and 152, Ladypool Road	...	123·0	...	...	·010	·002	3·5	·08	35,000	9·1	...	...	93·0	Very slightly turbid : pale blue
,,	21st	154, 156, 158, and 160, Ladypool Road	...	107·0	...	...	·090	·750	0·0	·59	7,200	8·8	...	...	84·0	Very turbid ; greenish yellow
May	26th	*59 and 60, Kyott's Lake Road	...	139·0	...	...	·007	·000	5·3	·07	53,000	5·7	...	...	120·0	Very slightly turbid ; pale green
June	16th	334 and 336, Belgrave Road ...	...	247·0	...	...	·019	·002	8·5	·22	84,840	15·0	...	...	186·0	Very slightly turbid ; greenish grey
July	7th	*10, Bristol Road	...	96·0	...	...	·006	·000	1·4	·08	14,000	8·7	...	...	80·0	Clear , pale green
,,	20th	74 and 75, Ryland Road ...	...	61·0	...	...	·003	·000	1·9	·05	19,000	3·2	...	...	46·0	Very slightly turbid ; pale blue
Sept.	21st	*24 to 34 in front, and Camden Square at the back, in Mary Street	...	230·0	...	...	·008	·004	7·7	·06	77,000	15·1	...	...	195·0	Very slightly turbid ; pale green
,,	29th	*188 and 190 in front, and 1, 2, and 3, at the back, in Balsall Heath Road ...	...	174·0	...	...	·004	·000	5·5	·05	55,000	14·2	...	...	130·0	Very slightly turbid ; pale green
Oct.	2nd	*79 to 89, Henley Street ...	...	62·0	...	...	·004	·001	0·4	·09	3,700	2·9	...	...	56·0	Very slightly turbid : pale green
,,	3rd	†Wellesbourne, Beech Lanes ...	...	52·0	...	...	·003	·010	2·2	·23	22,000	4·1	...	...	32·0	Very slightly turbid : pale green

* Diphtheria. † Typhoid Fever.

TABLE VIII.

Number of Deaths in each Street in the City of Birmingham during the Year, 1899.

STREETS.	Zymotic Diseases.	Other Diseases.
A		
A B Row		3
Abberley Street		2
Abbey Road		
Abbey Street	1	5
Abbotsford Road		1
Aberdeen Street	2	15
Ada Street		1
Adams Street	3	28
Adderley Road	1	22
Adderley Street	2	6
Addison Road		2
Adelaide Street	1	12
Albany Road		1
Albert Road		
Albert Street		1
Albion Street		8
Alcester Street	4	22
Alder Drive		
Alder Road		1
Alexandra Road		2
Alexandra Street	2	7
Alfred Street		3
Algernon Road		1
Allcock Street	1	9
Allen's Road	1	3
Allesley Street		12
Allison Street		21
All Saints' Road		
All Saints' Street		3
Alma Crescent	4	3
Alma Street		
Alston Street	2	7
Alum Rock Road		10
Ampton Road		
Anderton Road	2	9
Anderton Street	1	13
Anderton Park Road		
Andover Street		
Angelina Street	7	28
Annandale Road		
Anthony Road		2
Arden Road		7
Argyle Street	1	11
Arley Road		7
Armoury Road	2	8
Arsenal Street		1
Arter Street		2
Arthur Place		
Arthur Road		1
Arthur Street	4	39
Artillery Street		10
Ash Road	3	10
Ashford Street		6
Ashley Street	6	29
Ashted Row		11
Aston Road	2	29
Aston Street	2	8
Aston Brook Street	4	17
Aston Church Road	3	10
Asylum Road	3	7
Athole Street	1	
Atlas Road		6
Auckland Road	3	5
Augusta Street	1	
Augustus Road		2
Austin Street	1	3
Avery Road		1
B		
Bacchus Road	1	9
Bagot Street	5	18
Bailey Street		
Baker Street	4	13
Balden Road		
Balfour Street		1
Balsall Heath Road	8	38
Banbury Street	2	4
Banks Road		2
Barford Road	1	12
Barford Street	9	38
Barker Street	2	6
Barlow's Road		
Barn Street	1	22
Barnsley Road		
Barr Street	1	23
Barrack Street		1
Barrows Road	2	1
Bartholomew Row	2	6
Bartholomew Street	3	15
Barwell Road		1
Barwick Street		
Bath Passage		
Bath Row	4	11
Bath Street		4
Beach Street	1	12
Beaconsfield Road		3
Beak Street		2
Beaufort Road		3
Bedford Road	1	4
Beech Lanes		2
Beechfield Road	1	3
Belchers Lane		
Belgrave Road	5	36
Bell Street		1
Bell Barn Road	9	44
Bellefield Road		7
Bellis Street	2	6
Belmont Passage		4
Belmont Row	2	8
Benacre Street	2	21
Bennett's Hill		
Bennett's Road		1
Benson Road	3	8
Berkley Street		3
Berners Street		2
Berry Road		1
Berry Street	1	1
Bertram Road		2
Betholom Row		
Birchall Street	1	11
Birchwood Crescent		1
Birchwood Road	1	4
Bishop Street	2	27
Bishopsgate Street	3	20
Bissell Street	5	16
Black Pit Lane		
Blake Lane		5
Blakeland Street	2	9
Blews Street	2	9
Bloomsbury Street	3	22
Blucher Street	1	10
Blythe Street	4	10
Bolton Road	10	42
Bolton Street	2	3
Bond Street		
Bordesley Green	2	12
Bordesley Street	1	21
Bordesley Green Road	1	4
Bordesley Park Road	2	26
Bow Street	1	12
Bowyer Road		9
Bowyer Street		
Bracebridge Street	8	23
Bradford Street	4	17
Brathwaite Road		6
Branston Street		13
Brass Street		2
Brasshouse Passage		1
Brearley Street	18	57
Brewery Street		4
Brickiln Street		
Bridge Road		5
Bridge Street		1
Bridge Street West	14	36
Brighton Road	2	14
Bristol Road		8
Bristol Street	2	6
Brixham Road		
Broad Street	2	11
Bromford Lane		
Bromley Street	3	2
Bromsgrove Street	3	17
Brook Road		
Brook Street		
Brookfield Road		6
Broom Street	1	2
Browning Street	2	11
Brueton Street		
Brunswick Road	6	19
Buck Street		2
Buckingham Street	2	7
Bull Ring		7
Bull Street, Harborne		2
Bull Street, Market Hall		1
Bullock Street	2	5
Burbury Street	1	5
Burlington Road		1
Burney Lane		
Butler Street	1	4
Butler Street South		3
Butlin Street		4
Byron Road	1	8
C		
Calthorpe Road		3
Cambridge Crescent		1
Cambridge Street		5
Camden Drive		3
Camden Grove	5	4
Camden Street	9	59
Camp Hill		7
Camp Street		6
Canal Street	3	10
Cannon Street		
Cannon Hill Road		2
Cape Street		2
Cardigan Street	2	17
Carlisle Street		9
Carlton Road	3	13
Carlyle Road		2
Carnarvon Road		
Caroline Street		7
Carpenter Road		2
Carrington Road	4	4
Carr's Lane		1
Cartland Road		2
Carver Street		13
Castle Street		1
Cathcart Street		9
Cato Street		14
Cato Street North	1	7
Cattell Road	5	25
Cattell's Grove		7
Cavendish Road		1
Cecil Street	3	30
Chad Road		
Chandos Road		2
Chapel Street		2
Chapel House Street		2
Chapman Road	1	2
Charles Road	1	11
Charles Arthur Street		11
Charles Henry Street	11	37
Charlotte Road	1	
Charlotte Street		5
Chattaway Street		6
Cheapside	8	42

NOTE.—Deaths in hospitals, workhouses, asylums, and other public places have been referred as far as possible to the streets in which the deceased persons had resided.

STREETS.	Zymotic Diseases.	Other Diseases.
Cheatham Street .		3
Chequers Walk ..		4
Cherry Street		
Cherry Wood Road .	7	26
Chester Street.. ..	2	6
Chesterton Road .	2	10
Cheston Road ..		3
Chicheley Street ..	2	8
Chiswell Road ..		1
Church Road		
Church Street.. ..		1
City Road		3
Claremont Road ..		2
Clarence Road ..		2
Clarendon Road ..		4
Clark Street	2	26
Claverdon Street ..	1	7
Claybrook Street ..		3
Clayton Road		4
Clement Street ..	1	3
Cleve Terrace ..	1	1
Clevedon Road ..	1	13
Clifton Road	6	28
Clissold Street ..	1	5
Cliveland Street ..		7
Clodeshall Road ..		2
Clyde Street ..	1	3
Coleman Street ..	4	15
Coleshill Street ..		21
College Road	1	7
College Street		5
Colmore Row		3
Colville Road.. ..		8
Commercial Street ..		1
Common Lane.. ..		
Communication Row .	1	5
Congreve Street ..		
Constance Road ..		
Constitution Hill ..	3	4
Conway Road		
Conybere Street ..	3	27
Cook Street	1	9
Cooksey Road ..	2	24
Cope Street	1	9
Coplow Street ..	1	17
Coralie Street .	1	4
Cornwall Street ..		2
Coronation Road ..		
Corporation Street ..		4
Cotterill's Lane ..		
Couchman Road ..		6
Court Road		2
Court Oak Road ..		1
Coventry Road ..	2	53
Coventry Street ..		19
Cowper Street ..	3	18
Cox Street	2	17
Cox Street West ..	3	4
Coxwell Road ..		2
Crabtree Road ..	2	13
Cradock Road.. ..		9
Cranbury Street ..		3
Cranby Street.. ..		3
Cranemore Street ..	1	1
Crawford Street ..		6
Cregoe Street		13
Crescent	1	6
Cromer Road ..		1
Crompton Road ..		3
Cromwell Street ..	14	33
Crosbee Road		
Cuckoo Road		11
Cumberland Street ..		
Curzon Street		6
Cuthbert Road ..		9
Cyril Road	2	5
D		
Daisy Road		2
Dale End		5
Dallwood Road ..		
Dalton Street		
Darnley Road ..		
Dart Street		
Dartmouth Street ..	9	29
Darwin Street ..	5	33
Dawson Street ..	2	1
Dean Street		3
Dearman Road ..		3
Defford Road		2
Denbigh Street ..	1	6
Dennis Road		2
Derby Street . ..	4	9
Devon Street	7	15
Devonshire Street ..	6	20
Digbeth	2	18
Digby Street	2	3
Dixon Road		3
Doe Street		3
Dolman Street ..	4	12
Dolobran Road ..		9
Don Street	2	4
Dora Road	1	1
Dorset Road		
Dover Street		2
Drayton Road.. ..		2
Drew's Lane		
Drury Lane	1	1
Dryden Road		
Duchess Road.. ..		5
Duddeston Row ..		10
Duddeston Mill Road ..	3	17
Dudley Road	4	21
Dudley Street		1
Dugdale Street ..	1	5
Duke Street	2	17
Dymoke Street ..	3	13
E		
Earl Street		1
Eastern Road		
Easy Row .. .		2
Edgbaston Road ..		1
Edgbaston Street ..		3
Edgbaston Park Road..		
Edmond Road.. ..		
Edmund Street ..		6
Edward Road	5	22
Edward Street ..	3	20
Eldon Road		5
Eliot Street	1	5
Elkington Street ..		9
Ellen Street	1	19
Ellis Street		10
Elm Tree Road ..		
Elvetham Road ..		
Emerson Road ..		1
Emily Street	8	20
Emmeline Street ..		
Enfield Road		
Erasmus Road ..	1	5
Ernest Street		
Ernest Road		
Erskine Street.. ..		4
Essex Street .. .	1	8
Essington Street ..	2	12
Ethel Road		
Ethel Street		
Eton Road		3
Eva Road		10
Eversley Road ..	1	16
Exeter Street		
Eyre Street	4	7
F		
Factory Road		4
Falconer Road ..		
Fallows Road ..	4	6
Farm Road		
Farm Street	3	58
Farquhar Road ..		
Farquhar Road East ..		
Fawdry Street		2
Fazeley Street ..	3	12
Fellows Lane		
Finsbury Road ..		
Fisher Street		6
Floodgate Street ..	3	16
Florence Street ..	1	4
Floyer Road		
Ford Street	3	23
Fordrough Lane ..		1
Forster Street.. ..		7
Foundry Road ..	1	9
Fountain Road ..		
Fowler Street		
Fox Street		9
Francis Road		1
Francis Street ..	3	33
Frank Street		2
Frankfort Street ..	5	15
Franklin Street ..		4
Frederick Road ..		1
Frederick Street ..		1
Freeman Road ..	2	6
Freeman Street ..		1
Freeth Street	3	7
Friston Street ..	2	17
G		
Galton Street		1
Garbett Street ..	2	19
Garrison Lane ..	5	39
Garrison Street ..	3	20
Gas Street		
Gate Street	1	2
Geach Street	4	10
Gee Street	3	5
Gem Street		1
George Road		8
George St., Balsall H'th	1	6
George Street, St. Paul's		4
George Street West ..	2	23
Gibb Street	1	7
Gillhurst Lane ..		
Gillott Road	2	7
Gladstone Road ..	1	5
Glebe Street	2	4
Gloucester Street ..		1
Glover Street ..	4	20
Glover's Road ..	1	5
Godwin Street.. ..	1	13
Golden Hillock Road ..	3	11
Gooch Street	2	20
Goode Street		6
Goodrick Street ..	1	11
Gopsall Street ..		2
Gordon Road	2	7
Gordon Street	2	5
Gosford Street ..	2	2
Gosta Green	1	4
Gough Road	2	6
Gough Street		7
Grace Road	2	6
Grafton Road		
Graham Street ..	1	3
Grange Rd.	1	11
Grant Street	2	10
Grantham Road ..		4
Granville Street ..	2	12
Gray Street .. .	1	2
Gray's Road	1	
Great Barr Street ..	5	22
Great Brook Street ..	2	33
Great Charles Street ..	2	
Great Colmore Street ..	5	45
Great Francis Street ..	6	33
Great Hampton Row ..	5	14
Great Hampton Street..	1	8
Great King Street ..	6	21

STREETS.	Zymotic Diseases.	Other Diseases.
Great Lister Street ..	3	20
Great Russell Street ..	17	34
Great Tindal Street ..	2	8
Green Lane	3	28
Green St., Deritend ..		6
Green Street, Saltley ..		1
Greenfield Crescent ..		
Greenfield Road ..	4	4
Greenway Street ..	1	23
Grosvenor Road ..		
Grosvenor Street ..		1
Grosvenor Street West	1	21
Grove Lane	1	
Grove Street ..		
Guest Street ..		8
Guildford Street ..	4	11
Guthrie Street ..		
H		
Hack Street		1
Haden Street		
Hadley Street.. ..		7
Hagley Road		17
Halberton Street ..	1	4
Hall Road		5
Hull Street	1	7
Hallam Street ..		8
Hampden Street ..		5
Hampton Street ..	4	11
Hams Road		
Handsworth New Road	1	5
Hanley Street ..	1	12
Hanover Street ..		2
Harborne Road ..		5
Harborne Park Road ..	3	3
Harding Street ..		
Harford Street ..		4
Harold Road		
Harris Road		
Harrison's Road ..		1
Hart's Road		4
Hartop Road		1
Hatchett Street ..	5	15
Havelock Road ..	1	11
Hawkes Street ..		7
Hawthorn Road ..		
Heath St.	8	45
Heath Street South ..		4
Heath Green Road ..	1	2
Heath Mill Lane ..	2	19
Heaton Street	3	16
Helena Street	1	1
Heneage Street ..	5	48
Henley Street	2	12
Henn's Walk		1
Henrietta Street .		
Henry St.	5	12
Henshaw Road ..		7
Herbert Road	6	21
Hermitage Road ..		1
Herrick Road		5
Hertford Street ..		2
Hicks Square		1
Hick Street	1	13
Hickman Road ..		1
High Street	1	2
High Street, Bordesley and Deritend ..	4	32
High St., Harborne ..		7
High St., Saltley ..		2
Highfield Rd., Edgb'ton		
Highfield Rd., Saltley .	2	10
Highgate Place .		1
Highgate Road .	5	22
Highgate Square		
Highgate Street ..	12	18
High Park Street .		4
Hill Street ..		6
Hinckley Street ..		
Hingeston Street .	2	15
Hobmoor Road .		4
Hockley Hill	2	10
Hockley Street ..		5
Holborn Hill	1	10
Holder Road		
Holland Street ..		4
Holliday Street ..	1	11
Hollier Street	1	8
Holloway Head ..	2	10
Holly Road		1
Holt Street	1	11
Homer Street		4
Hooper Street.. ..		7
Hope Street	5	28
Horse Fair		1
Hospital Street ..	8	72
Howard Street ..	3	12
Howe Street	1	6
Hubert Street ..		
Hugh Road		5
Humpage Road ..	1	6
Hunter's Road ..		
Hunter's Vale		
Hurst Street	2	28
Hutton Road		
Hyde Road		4
Hylton Street		1
I		
Icknield Square ..	1	12
Icknield Street ..	7	27
Icknield Port Road ..	8	49
Inge Street	2	7
Ingleby Street ..		8
Inkerman Street ..	5	19
Irving Street	8	38
Islington Row.. ..		5
Ivy Lane		2
J		
Jakeman Road ..	1	5
Jakeman Walk ..	2	1
Jamaica Row	1	
James Street		1
James Turner Street ..		5
James Watt Street ..		2
Jenkins Street ..		4
Jennens Row	1	6
Jersey Road		2
John Bright Street ..		1
Johnson Street ..	2	5
Johnstone Street ..		5
K		
Keeley Street		6
Kendal Road		2
Kenelm Road	3	5
Kent Street		10
Kent Street North ..		10
Kenyon Street ..		8
Key Hill	3	7
King Street		1
King Alfred's Place ..		1
King Edward's Place ..		
King Edward's Road ..	1	15
Kingscote Road.. ..		
Kingsley Road ..	1	3
Kingston Road ..		6
Kingswood Road ..		3
Kirby Road		2
Kitchener Street ..		4
Knutsford Street ..		4
Kyott's Lake Road ..	1	1
Kyrwick's Lane	4	12
L		
Ladypool Road ..	6	15
Ladywell Passage ..		
Ladywell Walk ..		
Ladywood Road ..		30
Lancaster Street ..	5	11
Landor Street	1	13
Langley Road ..		6
Lansdowne Street ..	2	11
Larches Street ..	4	11
Latimer Street ..	8	27
Lawden Road ..	1	12
Lawford Street ..	1	4
Lawley Street ..	6	23
Lawrence Street ..	2	10
Lawson Street .		1
Leach Street		3
Leamington Road ..	2	11
Lease Lane		4
Ledsam Street ..	2	13
Lee Bank Road .	5	25
Lee Crescent .. .		2
Lee Mount		
Leek Street		1
Lees Street	3	8
Legge Lane		4
Legge Street	1	6
Leigh Road		
Lench Street		1
Lennox Street ..	9	13
Leonard Street ..	1	2
Leopold Street ..	2	11
Leslie Road		1
Lime Grove		
Lincoln Street ..	3	11
Lingard Street ..	3	10
Link Road		1
Lionel Street		4
Lister Street	1	9
Little Ann Street ..		3
Little Barr Street ..		4
Little Bow Street ..	1	1
Little Broom Street ..	1	2
Little Edward Street ..	1	1
Little Francis Street ..		1
Little Green Lane ..	6	18
Little King Street ..		4
Little Shadwell Street..		
Liverpool Street ..		5
Livery Street	1	
Lloyd Street		
Lodge Road	2	25
Lombard Street ..		8
Long Acre . ..	15	37
Long Street	2	14
Longbridge Road ..	1	2
Longmore Street ..	2	7
Lonsdale Road ..		1
Lord Street	4	11
Lordswood Road ..		5
Louisa Street		
Love Lane		2
Loveday Street ..		3
Lowe Street		2
Lower Dartmouth Street	2	7
Lower Darwin Street ..		2
Lower Essex Street ..	3	19
Lower Loveday Street..		2
Lower Priory.. ..		
Lower Temple Street ..		
Lower Tower Street ..	6	29
Lower Trinity Street ..	1	7
Loxton Street..		1
Ludgate Hill . ..		1
Lupin Street		12
Lyttelton Road ..		3
M		
Macdonald Street		13
Main Street	1	8
Malins Road		1

STREETS.	Zymotic Diseases.	Other Diseases.
Malthouse Lane	1	7
Malvern Street		3
Malvern Hill Road		5
Manchester Street	2	5
Manor Road		
Mansell Road		
Margaret Road	1	2
Margaret Street		
Mark Lane		1
Markby Road	1	10
Market Street		2
Marlborough Road		2
Marroway Street		9
Marshall Street		9
Marshall Street South		5
Martineau Street		
Mary St., Balsall Heath	5	19
Mary Street, St. Paul's		1
Mary Ann Street		1
Masshouse Lane		1
Maxstoke Street	1	
Meadow Road		1
Medlicott Road	2	2
Melville Road		
Membury Road		
Meriden Street	2	17
Metchley Lane	1	9
Metchley Park Road		1
Metropolitan Road		1
Midland Street	1	
Miles Street	2	14
Milk Street	2	18
Mill Lane	1	10
Mill Street		7
Miller Street	7	23
Milton Street		11
Milward Street		8
Moat Lane		
Moat Row		
Moilliett Street		8
Moland Street	5	19
Mole Street	3	9
Mona Road		1
Montague Road		
Montague Street		1
Montgomery Street	1	6
Montpellier Street		5
Monument Road	3	43
Moor Street		11
Moore's Row		1
Moorsom Street	6	18
Moreton Street	1	5
Morville Street		15
Moseley Road	3	33
Moseley Street	3	20
Mostyn Road		1
Mott Street	1	10
Mount Pleasant		5
Mount Street	1	12
Muntz Street	1	11
Musgrave Road	2	10
Myddleton Street		
N		
Nansen Road		1
Navigation Street	1	6
Nechells Place	1	6
Nechells Park Road	2	28
Needham Street		2
Needless Alley		
Nelson Street	2	25
New Street	1	1
New Bartholomew St.		5
New Bond Street	1	2
New Canal Street		23
Newdegate Street		3
Newhall Hill	1	6
Newhall Street		20
New John Street	5	25
New John Street West	9	65

STREETS.	Zymotic Diseases.	Other Diseases.
New Market Street		
New Meeting Street		1
Newport Road	1	3
New Spring Street	2	24
New Summer Street	9	33
Newton Street		2
Newtown Row	5	32
Niger Road		
Nile Street		
Noel Road	1	4
Norfolk Road		2
Norman Street	2	16
North Road		9
Northampton Street		
Northbrook Street		5
Northfield Road	3	5
Northumberland Street	1	8
North Warwick Street		
Northwood Street	1	20
Norton Street	1	3
Norwood Road	2	6
Nova Scotia Street		4
Nursery Road		
O		
Oakfield Road		8
Oakley Road	1	3
Old Square		
Old Church Road		
Old Cross Street		
Oldfield Road	5	13
Old Meeting Street		
Oliver Road		1
Oliver Street	2	8
Ombersley Road	7	14
Oozells Street		1
Oozells Street North	1	2
Orchard Road	1	2
Ormond Street	4	11
Osborn Road	1	5
Osler Street	7	13
Oughton Place	1	3
Owen Street		2
Oxford Street		13
Oxygen Street		6
P		
Paddington Street		5
Paignton Road		
Pakenham Road		1
Palace Road	2	10
Palmer Street		7
Palmerston Road		2
Parade	1	4
Paradise Street		1
Park Lane	3	4
Park Road	5	51
Park Street	1	19
Parkfield Road		1
Park Hill Road		2
Parker Street	4	9
Parliament Street	2	8
Paxton Road	1	3
Pebble Mill Road		
Peel Street		17
Pemberton Street		4
Pembroke Road		2
Penn Street	1	2
Percival Road		
Perrot Street	1	6
Pershore Road	2	16
Pershore Street	7	17
Phillimore Road	1	5
Phillip Street		
Pickford Street		5
Piddock Street	1	2
Pigott Street	1	10

STREETS.	Zymotic Diseases.	Other Diseases.
Pitney Street		
Pitsford Street		3
Pitt Street		
Plough & Harrow Road		
Plume Street		
Pope Street		17
Poplar Avenue		2
Poplar Road		
Porchester Street	1	4
Porthope Road		4
Portland Road	1	1
Potter Street		2
Powell Street		5
Prescott Street	2	13
Preston Road	1	7
Price Street	1	11
Priestley Road		4
Prince Albert Street		10
Prince Arthur Road	2	7
Princes Row		1
Princes Street	1	2
Princess Road		2
Princip Street	1	13
Priory Road		2
Pritchatt's Road		
Pritchett Street	7	30
Proctor Street	2	14
Prospect Row	1	
Q		
Queen Street	2	7
Queen's Park Road		2
R		
Radnor Street		7
Raglan Road		
Railway Terrace	1	16
Ralph Road		
Rann Street	1	14
Ravenhurst Road		1
Ravenhurst Street		11
Rawlins Street	1	10
Raymond Road		2
Rea Street	2	25
Rea Street South	1	6
Redhouse Road		
Regent Parade		
Regent Place		1
Regent Road		2
Regent Row		4
Regent Street		
Regent Park Road	1	4
Reginald Road	2	6
Reservoir Retreat		
Reservoir Road	1	7
Richard Street	5	20
Richmond Hill Road		1
Ridley Street	2	2
River St., Balsall Heath	1	11
River St., St. Barthol'w's		3
Robert Road		3
Rocky Lane	7	10
Rodway Street		2
Rosalie Street		2
Rose Road		2
Rosebery Street	2	5
Roshven Road	2	5
Rotton Park Road		5
Rotton Park Street		
Rowland Street	1	3
Runcorn Road	1	7
Rupert Street	8	16
Rushbury Road		
Russell Street		
Ruston Street	6	23
Rutland Road		3
Ryder Street		6
Ryland Road	3	6
Ryland Street		12

STREETS.	Zymotic Diseases.	Other Diseases.
S		
St. Andrew's Road ..	3	16
St. Augustine's Road ..		
St. Clement's Road ..	1	10
St. George's Place ..	2	4
St. George's Street ..	3	23
St. James' Place ..	1	5
St. James' Road ..		1
St. James' Street ..	1	7
St. John's Road ..		3
St. Luke's Road ..	4	18
St. Margaret's Road ..		4
St. Mark's Street ..	1	20
St. Martin's Lane ..		
St. Martin's Place ..		2
St. Martin's Row ..		2
St. Martin's Street ..	3	9
St. Mary's Road ..		
St. Mary's Row ..		6
St. Mary's Street ..	1	8
St. Oswald's Road ..	1	1
St. Paul's Road ..	2	7
St. Paul's Square ..	1	1
St. Peter's Place ..		1
St. Peter's Road ..		
St. Saviour's Road ..	2	10
St. Stephen's Street ..		1
St. Vincent Street ..	2	15
Satop Street		3
Saltley Road . ..	3	17
Saltley Street	3	5
Sampson Road ..		6
Sampson Road North ..	1	3
Sand Pits	1	5
Sand Street		
Sandon Road		1
Sandy Lane	2	21
Sarah Street		
Scholefield Street ..	5	18
Scotland Street ..		3
Scott Street		3
Sefton Road	1	3
Selly Park Road ..		1
Selwyn Road		1
Serpentine Road ..		2
Severn Street		3
Seymour St., B's H H'th	2	
Seymour St., St. Barth.		
Shadwell Street .	1	7
Shakespeare Road .	4	13
Sheep Street	1	19
Sheepcote Lane ..		2
Sheepcote Street ..	2	15
Shefford Road ..		3
Shenstone Road ..		2
Sherborne Street ..	3	32
Sherbourne Road ..	6	28
Sherlock Street ..	4	29
Sir Harry's Road ..		1
Skinner Lane	2	7
Skinner Street .		3
Sladefield Lane ..		
Slaney Street		2
Sloane Street . .	3	15
Smallbrook Street .		2
Smith Street ..	3	13
Smithfield Passage ..	1	1
Smithfield Street ..		
Snow Hill	1	4
Somerset Road .		4
Somerset Street ..		4
Somerville Road ..		6
South Road	1	8
South Street . ..		
Spark Street		3
Speaking Stile Walk ..	1	1
Speedwell Road ..		2
Spencer Street ..	1	4
Spiceal Street		
Spon Terrace .. .		
Spooner Street ..	1	3

STREETS.	Zymotic Diseases.	Other Diseases.
Spring Hill		21
Spring Hill Passage ..		9
Spring Road	1	3
Spring Street		3
Spring Vale		3
Springfield Street ..	2	9
Stafford Street ..		1
Stanhope Street ..	6	11
Staniforth Street ..	3	16
Stanley Road		1
Stanmore Road ..		3
Station Avenue ..		
Station Road ..		1
Station Street . ..		1
Stechford Lane ..		
Steelhouse Lane ..		9
Stella Street	1	4
Stephenson Place ..		
Stephenson Street ..		
Steward Street ..	3	14
Stirling Road ..		2
Stoke Street	2	15
Stone Yard		2
Stoney Lane	3	9
Stour Street	3	15
Stratford Place ..		4
Stratford Road ..		15
Stratford Street ..		4
Strensham Road ..		2
Stuart Street		6
Studley Street ..	5	7
Suffolk Street.. ..		14
Summer Lane.. ..	12	41
Summer Road . ..	2	11
Summer Row .. .		
Summerfield Crescent..		7
Summerfield Road .		2
Summer Hill Road ..	2	4
Summer Hill Street ..	4	12
Summer Hill Terrace ..	1	4
Sun Street	1	16
Sun Street West ..		3
Sutton Street		4
Swallow Street ..		
Sydenham Road ..	3	13
Sydney Road		1
T		
Talbot Street	3	8
Talfourd Street ..	5	16
Tarry Road		3
Taunton Road . ..		3
Taylor Street	1	2
Teall Road		4
Temple Row		
Temple Row West ..		
Temple Street.. ..		
Templefield Street ..	3	6
Tenby Street		3
Tenby Street North ..	1	1
Tennal Road		
Tennal Lane		
Tennant Street ..	2	29
Tennyson Road ..		
Theodore Street ..	2	12
Theresa Road		2
Thimble Mill Lane ..	3	8
Thomas Street ..	1	6
Thorp Street	1	4
Tibbitts Lane		
Tillingham Street ..	2	1
Tilton Road	4	30
Tindal Street	3	6
Tower Street	6	19
Trafalgar Road ..		1
Treaford Lane ..		
Trent Street		8
Trevor Street		12
Trinity Terrace ..		

STREETS.	Zymotic Diseases.	Other Diseases.
Tudor Street	3	10
Turner Street	6	4
Twyning Road ..		6
U		
Unett Street ..	3	27
Union Passage ..		
Union Street		
Upper Cox Street ..	4	5
Upper Dean Street ..		
Upper Gough Street ..	1	10
Upper Highgate Street	3	12
Upper Marshall Street .	1	1
Upper Mill Lane ..		
Upper Priory		
Upper Ryland Road ..		5
Upper Trinity Street ..	2	7
V		
Varna Road		3
Vaughton Street ..	2	16
Vaughton Street South		1
Vauxhall Grove ..		2
Vauxhall Road ..	5	14
Vauxhall Street .	1	1
Venetia Road		2
Ventnor Road.. ..	1	
Vere Street		8
Vernon Road		
Vicarage Rd., Edgbaston	1	
Vicarage Rd , H'borne..		
Victor Road		2
Victoria Grove ..		
Victoria Road ..		2
Victoria Street ..		8
Villa Street	1	4
Villiers Street		7
Vincent Crescent ..		3
Vincent Parade ..	4	9
Vincent Street ..	2	13
Vine Street		
Vittoria Street . ..		7
Vivian Road		10
Vyse Street		1
W		
Walford Road.. ..	1	4
Walter Street		13
War Lane . ..		
Ward End		2
Ward Street	1	5
Warner Street.. ..	1	4
Warren Road		1
Warstone Lane ..	2	14
Warstone Parade East..		1
Warwick Street ..	5	18
Washington Street ..	2	7
Washwood Heath Road	4	12
Water Street		4
Waterloo Street ..		1
Waterworks Road ..	2	8
Watery Lane	5	28
Watts Road		
Wavell Road		
Waverley Road ..		5
Weaman Street ..		20
Well Lane		
Well Street	2	18
Wellesley Street ..		9
Wellington Road .		4
Wellington Street ..	4	14
Wenman Street ..	5	18
Wentworth Road ..		
Westbourne Road ..		
Western Road	1	
Westfield Road ..		

STREETS.	Zymotic Diseases.	Other Diseases.
West Heath Road ..		3
Westley Street ..	3	10
Weston Street		1
Wharf Lane		
Wharf Street	2	10
Wharton Street ..		6
Wheeler Street ..	8	12
Wheeley's Lane ..		3
Wheeley's Road ..		
Whitby Road		2
White Road	1	14
White Street	2	4
Whitehall Road ..		5
Whitmore Road ..	1	6
Whitmore Street ..	3	7
Whittall Street ..		4
Wiggin Street ..		3
Willes Road ..	1	4
William Street ..	4	30
William Street North ..	1	6
William Edward Street	4	11
William Henry Street ..	2	4
Willis Street	3	12
Willow Avenue ..		
Willow Crescent ..		
Willow Road		4
Wilton Street		8
Wimbourne Road ..		
Windmill Street ..	1	2
Windsor Street ..	9	39
Winson Street... ..	1	14
Winson Green Road ..	1	19
Witton Street	4	5
Wolseley Street ..	1	8
Wood Lane	1	1
Wood Street		3
Woodbourne Road ..		
Woodcock Street ..	3	11
Woodfield Road ..		7
Wood Green Road ..		1
Woodville Road ..		
Worcester Street ..		
Wordsworth Road ..		9
Wrentham Street ..	2	13
Wright Road	6	13
Wright Street	2	7
Wrottesley Street ..		2
Wyndcliffe Road ..		3
Wyndham Road ..		2
Wynn Street	3	19

STREETS.	Zymotic Diseases.	Other Diseases.
X		
Y		
Yardley Road		3
Yateley Road		
Yew Tree Road ..		1
York Road	1	4
York Street	1	2
Z		

STREETS.	Zymotic Diseases.	Other Diseases.
ADDENDA.		
Not located	18	267
TOTALS	1490	9034

Grand Total 10524

REPORT
ON
ADULTERATION.

City Analyst's Laboratory,
The Council House, Birmingham,
March 7th, 1900.

To the Health Committee.

Mr. Chairman and Gentlemen,

I beg to report that during the year 1899 I received for analysis 1,131 samples of food, drink, and drugs. One sample was submitted by a private purchaser, twenty-one samples by Mr. Parker, Inspector of Nuisances, and the remainder by Mr. H. I. Jones, the Food and Drug Inspector under the Act.

In the following table the samples analysed during the last two years are divided into four classes, the adulterated articles being separated into those adulterated with preservatives only, and those adulterated in other ways.

Table A.—Total Samples.

	Number analysed.		Number adulterated.			
			Preservatives only.		Other ways.	
	1898	1899	1898	1899	1898	1899
Samples of Food ...	1,056	1,027	104	112	101	107
Samples of Drink ...	55	12	2	0	2	0
Samples of Drugs ...	27	85	0	0	7	19
Samples of Margarine	8	7	0	0	8	7
Total Samples ...	1,146	1,131	106	112	118	133

The number of samples of drink analysed last year was lower than is usual, chiefly because no samples of spirits were submitted to me, while the number of drugs was decidedly higher than 1898, when the number received was exceptionally small.

The following table gives particulars of the samples analysed since 1873.

Table B.—Total Samples.

Years.	Samples per Annum.	Persons per Sample.	Percentage of Adulteration.		Samples of Margarine per Annum.
			Preservatives only.	Other ways.	
1873-76	83	4,395	1	47	0
1877-81	175	2,219	1	24	0
1882-86	616	666	0	16	0
1887-91	836	507	0	12	2
1892-96	1,074	458	3	11	5
1895	1,131	439	0	11	1
1896	1,138	440	11	8	20
1897	1,145	442	11	13	17
1898	1,146	445	9	10	8
1899	1,131	455	10	11	7

Last year ten per cent. of the samples were adulterated with preservatives only, and eleven per cent. in other ways: in each case the proportion was rather higher than in the previous year, but a little lower than in 1897. The large increase in the percentage of adulteration by preservatives only in 1896, was due to the commencement in that year of the systematic examination of all samples of butter and milk for the presence of preservatives.

The Report of the Local Government Board for 1898 shows that twelve per cent. of the samples examined in London, and nine per cent. of the total samples examined in England and Wales were reported to be adulterated, but no information is given as to the number of articles condemned because of the presence of preservatives.

Last year one sample was analysed for every 455 persons living in the City of Birmingham. In 1898 the proportions were. Birmingham, one sample for 445 persons: London, one for 378 persons: England and Wales one sample for every 634 of the population.

Some years ago the Local Government Board considered that at least one sample of food should be analysed annually for every 1,000 of the population. In 1896 the Parliamentary Committee on Food Products Adulteration reported that "It is greatly to be desired that a proportion of samples much in excess of one sample per annum for every 1,000 of the population should be taken in the district of every local authority," and "A local authority would do well to increase the number of samples taken on their behalf from time to time until the number of adulterated samples found in those taken falls below the proportion which may be regarded as not unsatisfactory."

1.—SAMPLES OF FOOD AND DRINK.

In the following table the samples of food and drink received are classified as genuine and adulterated. The number of samples of margarine found to be unlabelled during exposure for sale or wholesale consignment is also given. The corresponding lists of drugs is given in table R.

TABLE C.—SAMPLES OF FOOD AND DRINK.

Articles.	No. of Samples Analysed.		No. of Samples Adulterated.	
	Total.	Genuine.	Preservatives only.	Other ways.
Milk	439	335	30	74
Skimmed Milk	2	1	0	1
Separated Milk	1	0	0	1
Butter...	313	215	81	17
Coffee	111	99	0	12
Flour	33	33	0	0
Bread	32	32	0	0
Demerara Sugar	24	23	0	1
Malt Vinegar	22	21	1	0
White Pepper	21	20	0	1
Sugar Confectionery	12	12	0	0
Ale	12	12	0	0
White Granulated Sugar ...	7	7	0	0
Lard	4	4	0	0
Cheese...	4	4	0	0
Oatmeal	2	2	0	0
	1,039	820	112	107
Margarine	7			
	1,046			

MILK.

During the year I received 442 samples of milk, skimmed milk, and separated milk. Forty-two samples contained an excess of water, twenty-eight samples had been deprived of part of their fat, and six others had been adulterated in both these ways, the total being seventy-six samples, or seventeen per cent. Thirty other samples, or seven per cent., were condemned because of the presence of preservatives, four samples being adulterated with boric acid, and twenty-six with formic aldehyde.

The number of samples of milk analysed last year was equivalent to one sample for every 1,165 persons living in Birmingham; during 1898 one sample was analysed for each 1,157 persons, while in London the proportion for that year was one sample for 880 persons, and in England and Wales as a whole, one sample was analysed for each 1,546 persons.

Seventeen per cent. of the 439 samples submitted as "milk" were deficient in fat or contained an excess of water, a proportion of adulteration decidedly higher than that of the last three years, when the figures have been: 1898, eleven per cent: 1896 and 1897, fourteen per cent.; while in 1895 eighteen per cent. were found to be adulterated. This unsatisfactory figure for the year is due to the large proportion of adulteration during the last two quarters of the year as shown below.

TABLE D.—ADULTERATION OF MILK.

Period.	Percentage of Adulteration.	
	1899.	Average of 1896–98.
First Quarter	17	15
Second Quarter	10	11
Third Quarter	20	14
Fourth Quarter	21	12

In the next table is given the average composition of all the samples of "milk" examined during the last six years; the percentage of fat was rather lower than usual last year.

It will be noticed that in each year the percentage of fat is higher than 3·5, and that the percentage of solids not fat, with one exception, amounts to 8·5; the standards which I have used for the past twelve years for calculating the percentage of adulteration of sophisticated samples, and that this is in spite of the fact that all samples, even the heavily adulterated ones, are included in these averages.

TABLE E.—AVERAGE COMPOSITION OF ALL "MILK" SAMPLES.

Year.	Total Solids, per cent	Fat, per cent.	Solids, not Fat, per cent.
1894	12·3 ...	3·7 ...	8·6
1895	12·2 ..	3·8 ...	8·4
1896 ...	12·2 ...	3·7 ...	8·5
1897	12·2 ..	3·7 ...	8·5
1898	12·4 ...	3·9 ...	8·5
1899	12·2 ...	3·6 ...	8·6

All the samples of "milk" analysed last year are arranged below according to the precentage of total solids present, and for comparison, the figures for 1898 are also given. The worst sample last year contained 8·8 per cent. of total solids, being adulterated with twenty five per cent. of water, while the best contained 20·5 per cent. of total solids. Last year thirty six per cent. of the samples were adulterated or of low quality, containing less than twelve per cent. of total solids; the previous year was unusually good, only twenty-five per cent. being below this standard.

TABLE F.—COMPOSITION OF ALL SAMPLES OF "MILK."

Percentage of Total Solids.	Number of Milks. 1899.	Percentage of Total Milks.	
		1899.	1898.
7— ...	0	0·0	0·2
8— ...	1	0·2	0·9
9— ...	3	0·7	0·9
10— ...	24	5·5	3·8
11— ...	131	29·8	19·2
12— ...	235	53·5	55·8
13— ...	39	8·9	15·1
14— ...	3	0·7	1·4
15— ...	2	0·5	1·6
16— ...	1	0·2	1·1
Total ...	439	100·0	100·0

Preservatives were detected in thirty-eight samples during the year; in four cases boric acid was used, in thirty-three formic aldehyde, and one sample contained both preservatives; 8·6 per cent. of the samples of milk being adulterated in these ways, a proportion somewhat lower than that of the two previous years, as shown by the following table.

TABLE G.—ADULTERATION OF MILK WITH PRESERVATIVES.

Year.	Boric Acid. per cent.	Formic Aldehyde, per cent.	Both, per cent.	Total, per cent.
1896 (April to December	8·3 ...	...	...	
1897	5·5 ...	3·3 ...	0 ...	8·8
1898	2·9 ...	6·4 ...	0·7 ...	10·0
1899	0·9 ..	7·5 ...	0·2 ...	8·6

The steady decrease in the use of boric acid is satisfactory, it having been used nine times more frequently in 1896 than last year, but on the other hand the use of formic aldehyde is steadily increasing, its presence being detected more than twice as frequently last year as in 1897, the first year in which samples were systematically examined for it.

One would expect that the use of preservatives in milk would be confined to the warm summer months, but on the contrary they are used all the year round. The average of the last three years shows that 4·1 per cent. of the samples examined during the colder months (November to April) contained preservatives, and that it was present in 15·5 per cent. of those analysed during the remaining warmer months.

Arranged in months, the figures are as follows:—

TABLE H.—MONTHLY VARIATION IN THE USE OF PRESERVATIVES, 1897-9.

Month.	Percentage of Samples containing Preservatives	
November	10	4·1
December	4	
January	2	
February	2	
March	4	
April	3	
May	10	
June...	26	15·5
July...	13	
September	16	
October	14	
Years 1897 to 1899...	—	9·2

The samples of milk examined during the last three years have also been classified according to the presence or absence of preservatives, and the percentage of adulteration by addition of water or removal of cream has been calculated for each class. These results show thirteen per cent. of the samples free from preservatives were adulterated in these ways, but that twenty per cent. of the samples containing preservatives were also deficient in fat or contained an excess of water. In other words, there is a tendency for adulteration by preservatives and adulteration in other ways to go together.

TABLE I.—PRESERVATIVES AND ADULTERATION OF MILK, 1897-9.

	Water in Excess, per cent.	Fat Deficient, per cent.
Samples with—		
Preservatives Present	9	11
Preservatives Absent	6	7

Boric acid was detected in only five samples of milk; one sample also contained formic aldehyde and an excess of water, one sample contained only 11·6 per cent of total solids, the other three were of fair quality. As remarked above, the percentage of adulteration with boric acid is now very small, formic aldehyde apparently taking its place.

In the following table the 73 samples of milk in which boric acid has been detected since April, 1896, are arranged according to the percentage of boric acid that was present.

About half of the samples contained less than 0·03 per cent. (21 grains per gallon), about a quarter from 0·03 to 0·06 per cent. (21-42 grains per gallon), and in the remainder quantities of boric acid up to 0·18 per cent. (126 grains per gallon) were found.

TABLE J.—QUANTITY OF BORIC ACID FOUND IN MILK.

Per cent.		Grains per Gallon.		Number of Samples.
Less than 0·01	...	Less than 7	...	8
0·01—	...	7—	...	14
0·02—	...	14—	...	14
0·03—	...	21—	...	5
0·04—	...	28—	...	5
0·05—	...	35—	...	9
0·06—	...	42—	...	4
0·07—	...	49—	...	5
0·08—	...	56—	...	4
0·09—	...	63—	...	1
0·10	...	70	...	3
0·18	...	126	...	1
		Total	...	73
Less than 0·03	...	Less than 21	...	36 or 49%
0·03—0·06	...	21—42	...	19 or 26%
0·06—0·18	...	42—126	...	18 or 25%

Formic aldehyde was found to be present in thirty-four samples of milk. Nineteen of them were of fair or good quality, four were adulterated with water, three were deficient in fat, seven were of low quality, and one contained an excess of water as well as being adulterated with boric acid in addition to the formic aldehyde.

The use of this preservative shows a steady increase. In 1897 3·3 per cent. of the samples contained it, in 1898 6·4 per cent., and last year 7·5 per cent. were adulterated with it. This increase is probably due to two causes, firstly, much less is required to preserve milk than if boric acid is used; and secondly, the numerous prosecutions for the sale of borated milk in the country appear to have made the milk dealers prefer employing a preservative for the use of which there is little or no risk of prosecution.

I have several times expressed my opinion that preservatives should not be allowed to be added to milk unless the fact of their addition and the quantity added is notified to the purchaser at the time of sale, as I consider that their addition either is, or is liable to be, injurious to health, particularly when given to children. These views have recently been strikingly confirmed by Dr. Annett, of University College, Liverpool.

To ascertain the effects of milk containing boric acid, he obtained fifteen kittens, three to four weeks old, and fed five of them on untreated milk, five on milk containing 40 grains of boric acid per gallon, and five on milk containing 80 grains per gallon. He found that the kittens taking borated milk soon began to lose their appetites, diarrhœa, inactivity, and depression soon followed, and at the end of the fourth week all the ten were dead, while none of the kittens taking untreated milk died. The kittens were weighed at the beginning of the experiment and at the close of each week. The following Table shows the results at the end of three weeks:—

TABLE K.—ANNETT'S EXPERIMENTS ON KITTENS WITH MILK AND BORIC ACID.

Kitten.	Grains of Boric Acid per gallon of Milk.	Weight after three weeks. Per cent. of original weight.	
No. 1	None	109	131
,, 2	,,	145	
,, 3	,,	151	
,, 4	,,	137	
,, 5	,,	109	
,, 6	40*	75	90
,, 7	,,	93	
,, 8	,,	101	
,, 9	80	81	85
,, 10	,,	85	
,, 11	,,	70	
,, 12	,,	94	
,, 13	,,	97	

*Two other kittens taking milk with 40 grains of boric acid per gallon were dead at the end of the third week.

It will be noticed that all the kittens fed on untreated milk gained in weight, and that with one trifling exception (No. 8), all the animals taking boric acid lost weight. During the three weeks the kittens fed on milk free from preservatives gained thirty-one per cent. of their original weight; those fed on milk containing forty grains of boric acid per gallon lost ten per cent. of their weight; and where the quantity was eighty grains the loss was fifteen per cent.

Experiments were also made with kittens of a similar age to ascertain the effect of formic aldehyde. Milk containg two, four, or eight parts of formalin per 100,000 was found to give the kittens diarrhœa and gaseous distension of the abdomen, in some cases followed by emaciation and death. A number of other kittens were fed on untreated milk, but otherwise kept under the same conditions. All the animals were weighed at the beginning of the experiment, and at the end of every week. Below the percentage of increase in weight is given for each series of kittens at the end of five weeks.

TABLE L.—ANNETT'S EXPERIMENTS ON KITTENS WITH MILK AND FORMIC ALDEHYDE.

Number of Kittens.	Formic Aldehyde per 100,000 of Milk.	Weight after Five Weeks.	
		Per cent. of Original Weight.	Difference.
4 2†	None. 0·8*	158 138	20
3 4	None. 1·6*	164 140	24
3 3‡	None. 3·2*	172 124	48

* The formalin used is assumed to have contained 40 % of formic aldehyde—the usual strength.
† Three other kittens were dead at the end of the fifth week.
‡ Two other kittens were dead at the end of the fifth week.

The proportion of formic aldehyde used is very similar to that used by the milkman, and although the proportion is so very small the interference with nutrition is decidedly marked. In the first series the kittens fed on untreated milk gained twenty per cent. more weight than the kittens taking milk containing less than one part of formic aldehyde per 100,000. When the proportion of formic aldehyde was doubled, the kittens fed on plain milk gained twenty-four per cent. more than the others. When the proportion was a little over three parts the difference between the gain in weight of the two series of kittens was nearly half the original weight. I understand that other experiments on animals of larger size have since been made, which confirm those made upon the kittens.

I have referred to these experiments at some length, as I consider that it is exceedingly probable that similar effects will be produced by these preservatives on babies and young children, and I feel very strongly the very great importance of the prohibition of the use of preservatives in milk unless full information of its presence is given at the time of sale. I trust that before long the Departmental Committee of the Local Government Board now sitting will report, and that legislation will either prohibit or define very stringently the conditions in which these dangerous preservatives shall be used.

Fifty-three prosecutions were instituted for the adulteration of milk. In forty-two cases fines varying from 1s. to £15 were inflicted; in three cases the vendors were only ordered to pay the costs of the prosecution; eight cases were withdrawn, generally because the vendor has been fined for another adulterated sample, which seems hardly a logical reason; in one instance the vendor of an adulterated sample was cautioned by the Health Sub-Committee.

Samples 110 and 119 were obtained from one retailer, and in the latter case a warranty was proved; the wholesale dealer who gave the warranty was fined for samples Nos. 189 and 190.

Samples No. 232 and 233 were taken from two churns in one consignment from a wholesale creamery. The first sample contained 4·4 per cent. of fat, the second only 2·58 per cent., and was certified to contain 26 per cent. of fat less than natural. If the other churn is taken as the standard, 41 per cent. of fat was deficient. At the hearing of the case the Public Analyst for Dudley stated, on behalf of the defendant, that he had found 2·76 per cent. of fat in the sample, and that he considered it genuine. The Magistrates ordered the reserve sample to be sent to Somerset House for independent analysis. The analysts there reported that the 2·47 per cent. of fat which they found present indicated that a portion of the fat had been removed from the milk. A fine of five pounds and thirty-one shillings costs was imposed. The large amount of the costs was due to the adjournment and to the fee for the analysis at Somerset House.

The vendor of sample No. 904 sued the wholesale dealer who supplied him with the milk in the County Court for damages, and I was called to give evidence of my analysis of the sample. Samples obtained from two other retail dealers supplied by the same salesman were also found to be adulterated. On a subsequent occasion your Inspector obtained a sample of milk directly from his float, and found on it also a can of water coloured yellow. I found the milk to be of fair quality, so, apparently, he did not carry adulterated milk about with him, but mixed it for his customers as required. The jury awarded £5 damages, and the Judge considered it a very wicked fraud, and allowed costs on the higher scale.

Particulars of the prosecutions are given below.

NO.	DATE.	ADULTERATION.	FINES.
32—	Jan. 11th	Water in excess 5% and fat deficient 29%, formic aldehyde	Fined £5 and 8s. costs.
79—	〃 18th	Fat deficient 30%	Fined 10s. and 8s. costs.
110—	〃 31st	Water in excess 12% and fat deficient 18%	Fined 5s. and 8s. costs.
119—	〃 31st	Water in excess 12% and fat deficient 22%	Proved warranty. Ordered to pay 5s. costs.
168—	Feb. 14th	Fat deficient 28%, formic aldehyde	Fined £10 and 11s. costs.
189—	〃 21st	Water in excess 11%	Fined £10 and 9s. costs.
190—	〃 21st	Water in excess 16%	Prosecution withdrawn. Same vendor as No. 189.
212—	〃 27th	Fat deficient 21%	Fined £5 and 8s. costs.
214—	〃 27th	Fat deficient 34%	Fined £1 and 8s. costs.
215—	〃 27th	Water in excess 6% and fat deficient 23%	Fined 5s. and 9s. costs.
217—	〃 27th	Water in excess 25%	Fined £1 and 8s. costs.
233—	Mar. 6th	Fat deficient 26%	Fined £5 and 31s. costs.
242—	〃 8th	Fat deficient 20%	Fined 1s. and 8s. costs.
253—	〃 14th	Fat deficient 45%, formic aldehyde	Fined £2 and 8s. costs.
261—	〃 14th	Fat deficient 23%	Fined 5s. and 9s. costs.
272—	〃 22nd	Fat deficient 20%	Fined £2 and 17s. costs.
277—	〃 23rd	Water in excess 10%	Fined £3 and 10s. 6d. costs.
300—	〃 27th	Water in excess 12% and fat deficient 9%	Fined £2 and 8s. costs.
303—	〃 27th	Water in excess 10%	Prosecution withdrawn, defendant impecunious.
307—	〃 27th	Fat deficient 24%	Fined £2 and 9s. costs.
333—	April 8th	Fat deficient 28%	Fined £10 and £1 11s. costs.
334—	〃 8th	Fat deficient 28%	Prosecution withdrawn. Same vendor as No. 333.
335—	〃 8th	Fat deficient 26%	
336—	〃 8th	Fat deficient 28%	
362—	〃 20th	Fat deficient 22%	Fined 5s. and 8s. costs.
425—	May 10th	Fat deficient 28%, formic aldehyde	Fined 5s. and 8s. costs.
557—	June 14th	Fat deficient 32%	Fined £15 and £1 18s. 6d. costs.
559—	〃 14th	Fat deficient 27%	Prosecution withdrawn. Same vendor as No. 557.
649—	July 5th	Fat deficient 25 %	Fined £1 and 8s. costs.
761—	Sept. 8th	Water in excess 10 %	Fined £5 and 10s. costs.
794—	〃 19th	Water in excess 10 %, formic aldehyde	Fined 10s. and 8s. costs.
798—	〃 19th	Water in excess 15 %	Fined 10s. and 8s. costs.

NO.	DATE.	ADULTERATION.	FINES.
801	Sept. 20th	Water in excess 9 %	Fined £10 and 16s. costs.
802	„ 20th	Water in excess 8 %	Summons withdrawn, vendor being fined for No. 801.
810	„ 27th	Fat deficient 21 %	Fined 5s. and 8s. costs.
818	„ 27th	Water in excess 12 %	Fined 5s. and 8s. costs.
862	Oct. 13th	Water in excess 14 %	Fined 5s. and 8s. costs.
879	„ 18th	Water in excess 14 %	Fined £5 and 8s. costs.
881	„ 18th	Water in excess 11 %	Fined £1 and 8s. costs.
904	„ 25th	Water in excess 11 %	Fined 10s. and 8s. costs.
909	„ 25th	Water in excess 10 %	Fined 10s. and 8s. costs.
920	„ 31st	Water in excess 14 %, boric acid 0·01 %, formic aldehyde	Ordered to pay 5s. costs.
922	„ 31st	Fat deficient 48 %	Fined £2 and 8s. costs.
923	„ 31st	Fat deficient 42 %	Fined £2 and 8s. costs.
1030	Nov. 30th	Fat deficient 24 %	Fined £2 and 8s. costs.
1031	„ 30th	Fat deficient 20 %	Fined 10s. and 8s. costs.
1063	Dec. 6th	Water in excess 16 %	Fined £1 and 19s. 6d. costs.
1064	„ 6th	Water in excess 27 %	Summons withdrawn, same vendor as No. 1063.
1109	„ 28th	Fat deficient 20 %	Fined 10s. and 8s. costs.
1115	„ 28th	Water in excess 11 %, and fat deficient 14%	Fined 10s. and 8s. costs.
1119	„ 28th	Fat deficient 38 %	Ordered to pay 9s. costs.

Two samples were submitted as "*skimmed milk*"; one of them had only been slightly skimmed, containing nearly three per cent. of fat; the other, No. 650, had not been skimmed but adulterated with 7½ per cent. of water. The Vendor was fined £2 and 8s. costs.

The single sample of "*separated milk*" received, No. 729, contained 13 per cent. of water in excess, and also 28 grains of boric acid per gallon.

TABLE M.—MILK; SKIMMED MILK; SEPARATED MILK.

Years.	Samples per Annum.	Percentage of Adulteration.		Cautions per Annum.	Prosecutions per Annum.	Fines per Annum.		
		Preservatives only.	Other ways.			£	s.	d.
1873-76	28	—	54	0	8	5	5	0
1877-81	56	—	54	3	15	17	7	0
1882-86	184	—	31	18	28	26	4	5
1887-91	206	—	19	15	17	28	2	11
1892-96	354	—	16	24	33	38	2	5
1894	340	—	10	9	21	21	5	0
1895	325	—	18	16	39	43	6	0
1896	470	5	14	38	49	72	13	0
1897	399	7	14	27	44	58	6	0
1898	449	9	11	20	36	46	12	6
1899	442	7	17	1	53	112	1	0

The amount of the fines inflicted in 1899, was decidedly greater than in any previous year, and was nearly three times as high as the amount of the fines for the five years 1892-6.

The Report of the Local Government Board for 1898 shows that thirteen per cent. of the samples of milk examined in London were adulterated, and ten per cent. of the number analysed in England and Wales, but no information is given as to what proportion of the samples were condemned because of the presence of preservatives.

BUTTER AND MARGARINE.

During the year 313 samples of butter and seven samples of margarine were received for analysis. Seventeen samples of butter, or five per cent., were found to be adulterated with foreign fat; boric acid was present in all but two of them. In each case the vendors were prosecuted under the section of the Margarine Act which requires that "every person selling margarine by retail . . . . shall in every case deliver the same to the purchaser in or with a paper wrapper, on which shall be printed in capital letters, not less than a quarter of an inch square, 'Margarine.'" The results of the prosecutions were as follows:—

NO.	DATE.		RESULT OF PROSECUTION.
81	Jan. 23rd	...	Fined £5 and 9s. costs.
84	„ 23rd	...	Fined £2 and 9s. costs.
136	Feb. 3rd	...	Fined £5 and 9s. costs.
269	Mar. 15th	...	Proved warranty, summons dismissed.
375	April 21st	...	Fined £2 and 9s. costs.
550	June 8th	...	Fined £5 and 8s. costs.
633	July 4th	...	Fined £5 and 8s. costs.
824	Sept. 28th	...	Fined £5 and 9s. costs.
829	„ 28th	...	Fined £5 and 9s. costs.
836	Oct. 2nd	...	Fined £5 and 9s. costs.
843	„ 4th	...	Fined £3 and 8s. costs.
884	„ 18th	...	Ordered to pay 6s. costs.
890	„ 19th	...	Fined £2 and 9s. costs.
937	Nov. 2nd	...	Fined £3 and 10s. costs.
971	„ 10th	...	Fined £5 and 9s. costs.
975	„ 11th	...	Fined £5 and 9s. costs.
1018	„ 30th	...	Fined £5 and 9s. costs.

Each of the seven samples of margarine contained large proportions of foreign fat, in five of them boric acid was also present. In one case (No. 297) a fine of £10 and 16s. 6d. costs was inflicted for a wholesale consignment of margarine which did not comply with the regulation that each packet should be "branded or durably marked 'Margarine' on the top, bottom, and sides, in printed capital letters, not less than three-quarters of an inch square." The other six samples were exposed for retail sale without complying with the section of the Margarine Acts which orders that "there shall be attached to each parcel thereof so exposed, and in such a manner as to be clearly visible to the purchaser, a label marked in printed capital letters not less than one and half inches square, "Margarine." In five of the cases the vendors were prosecuted and fined as follows :—

NO.	DATE.	FINE.
85	Jan. 23rd	£2 and 8s. costs.
249	Mar. 10th	£2 and 8s. costs.
322	April 7th	£10 and 15s. 6d. costs.
860	Oct. 6th	£3 and 9s. costs.
891	„ 19th	£2 and 8s. costs.

Of the 296 samples of butter free from foreign fat, 81 samples or 27 per cent., contained boric acid. This proportion is worse than in the previous year, when 21 per cent. were thus adulterated, while in 1897 36 per cent. of the samples free from foreign fat were preserved with boric acid.

In the following table all the samples of butter and margarine containing boric acid are arranged according to the quantity found to be present :—

TABLE N.—QUANTITY OF BORIC ACID FOUND IN BUTTER AND MARGARINE.

Per cent.	Grains per pound.	Number of Samples.		
		Foreign fat present.	Foreign fat absent.	Total.
Less than 0·1	Less than 7	3	3	6
0·1—	7—	5	20	25
0·2—	14—	6	19	25
0·3—	21—	3	13	16
0·4—	28—	0	6	6
0·5—	35—	0	5	5
0·6—	42—	0	6	6
0·7—	49—	0	2	2
0·8—	56—	1	1	2
0·9—	63—	0	2	2
1·0—	70—	0	1	1
1·1—	77—	1	0	1
1·2—	84 —	0	1	1
1·3	91	0	1	1
1·6	112	0	1	1
Total		19	81	100
Less than 0·3	Less than 21			56 %
0·3 — 0·6	21 — 42			27 %
0·6 — 1·6	42 — 112			17 %

If boric acid is necessary to preserve butter—a statement which I cannot believe, seeing that about three-quarters of the samples received last year were free from it—the quantity used should certainly not exceed 0·3 per cent. (or 21 grains per pound), as the above table shows that more than half of the samples which had boric acid present contained less than that quantity. If seven samples out of eight require no boric acid, or less than 0·3 per cent., surely there is no excuse for the eighth containing more than that. Of course, the fact that boric acid is present should be declared at the time of sale.

In the following table the samples of butter free from foreign fat analysed during the last three years are arranged in months. It will be seen that during the colder months (November to April) 30 per cent. of these samples contained boric acid, and during the other warmer months 24 per cent. were thus adulterated. The larger prevalence of the use of boric acid in butter in the cold months, which is the opposite of what occurs with milk, I can only explain on the supposition that in these months butter is more plentiful, and therefore more fresh butter is used.

TABLE O.—BORIC ACID IN SAMPLES OF BUTTER FREE FROM FOREIGN FAT, 1897—9.

Months.	Percentage of Samples containing Boric Acid.	
November, December	30	30
January, February	28	
March, April	32	
May, June	15	24
July, August	25	
September, October	28	
Years 1897-1899	—	28

The following are the cases in which prosecutions were instituted for the adulteration of butter with boric acid :—

NO.	DATE.	ADULTERATION.	RESULT OF PROSECUTION.
9	Jan. 4th	Boric acid 1·0 %	Fined £2 and 10s. costs.
216	Mar. 10th	Boric acid 1·2 %	Fined £1 and 8s. costs.
247	" 10th	Boric acid 0·9 %	Fined £2 and 9s. costs.
501	May 30th	Boric acid 1·3 %	Fined £1 and 9s. costs.
634	July 4th	Boric acid 1·6 %	Proved warranty, summons dismissed.
1051	Dec. 5th	Boric acid 0·9%	Dismissed on production of guarantee.

TABLE P.—BUTTER AND MARGARINE.

Years.	Number of Samples.	Butter. Percentage of Adulteration.		Unlabelled Margarine. Number of Samples		Number of Cautions.	Number of Prosecutions.	Amount of Fines.		
		Preservatives only	Other ways.	Exposed for sale.	Wholesale Consignment.			£	s.	d.
1873-81	36	—	17	—	—	0	3	1	5	0
1882-86	153	—	35	—	—	14	32	18	18	6
1887-91	373	—	26	7	0	13	74	107	12	6
1892-96	957	—	13	19	4	28	126	268	4	6
1895	201	—	14	1	0	0	29	59	17	6
1896	258	30	9	16	4	22	37	108	10	0
1897	301	32	11	11	5	0	41	107	10	0
1898	347	19	11	4	4	6	48*	198	1	0
1899	320	26	5	6	1	0	29	97	0	0

* One prosecution was for manufacturing margarine in an unregistered factory.

Foreign fat was found in only five per cent. of the samples, a much smaller proportion than in any previous year. One cannot but connect the fall in the amount of adulteration with increase in the amount of the fines inflicted by the magistrates for adulterated butter and unlabelled margarine. During the last *three years* £402 11s. 0d. was paid in fines, while in the previous *five years* they amounted to £286 4s. 6d. Not only has the amount paid in fines increased, but also the average fine. During the last three years this was £3 14s. 6d., while the average for the years 1892-6 was £2 6s. 8d. Fines of this amount should tend to somewhat diminish the large profits obtained by the substitution of butter for margarine.

Seventeen per cent. of the samples of butter analysed in London during 1898 were adulterated, and eleven per cent. of those examined in England and Wales; but no information is given as to what proportion were adulterated with preservatives.

COFFEE.

Twelve of the 111 samples received, or eleven per cent., were adulterated with chicory, a proportion slightly higher than in any recent year, except 1897, when fifteen per cent. of the samples were adulterated. In 1898, ten per cent. of the samples analysed in London, and in England and Wales, were reported to be adulterated.

The following list gives the action taken with regard to the adulterated samples:—

NO.	DATE.	ADULTERATION.	ACTION.
98	Jan. 10th	Chicory 70%	Fined £1 and 9s. costs.
206	Feb. 22nd	Chicory 50%	Fined £5 and 9s. costs.
245	Mar. 10th	Chicory 12%	Proved warranty. Ordered to pay 8s. costs.
268	„ 15th	Chicory 90%	Fined £2 and 10s. costs.
381	April 21st	Chicory 25%	Fined 10s. and 9s. costs.
446	May 12th	Chicory 55%	Fined £5 and 10s. costs.
489	„ 26th	Chicory 60%	Fined 5s. and 9s. costs.
620	July 1st	Chicory 70%	Fined 10s. and 9s. costs.
627	„ 4th	Chicory 85%	Fined £1 and 9s. costs.
956	Nov. 8th	Chicory 26%	Cautioned by the Health Sub-Committee.
1045	„ 30th	Chicory 60%	Fined £1 and 9s. costs.

TABLE Q.—COFFEE.

Years.	Number of Samples.	Percentage of Adulteration.	Cautions.	Prosecutions.	Fines.		
					£	s.	d.
1873-81	86	14	0	3	1	5	0
1882-86	92	43	23	1	1	10	0
1887-91	113	37	0	5	1	10	0
1892-96	276	6	4	13	21	6	0
1894	57	7	1	3	5	1	0
1895	90	9	3	5	6	0	0
1896	53	9	0	5	10	5	0
1897	142	15	3	18	29	15	0
1898	91	9	0	8	18	10	0
1899	111	11	1	10	16	5	0

DEMERARA SUGAR.

Twenty-three of the twenty-four samples received were genuine, but the other (No. 447) consisted of a considerably cheaper substance known in the trade as yellow crystals, which consists of white sugar dyed with an aniline dye. The vendor was fined £1 and 10s. costs. He was fined at the same time for an adulterated coffee (No. 446). The sale of dyed sugar, and coffee containing more than half its weight of chicory may be a suitable combination, but can hardly be satisfactory to the purchaser.

WHITE PEPPER.

The twenty samples of white pepper purchased by Mr. Jones were genuine, but No. 362A submitted by a private purchaser was adulterated with 25 per cent. of ground ginger. On receiving my certificate, he commenced proceedings in the County Court against the wholesale dealer who supplied him with the pepper, but withdrew the action on being paid £20 damages.

MALT VINEGAR.

Nineteen samples were of satisfactory quality; two others were probably partly made from sugar. In my opinion, such preparations should not be sold as malt vinegar; but considering the varying legal decisions, I did not feel justified in certifying them as adulterated. Another sample contained 0·02 per cent. of boric acid, an entirely novel form of adulteration of vinegar, which illustrates the increasing risk incurred of having all articles of food dosed with antiseptics.

OTHER ARTICLES OF FOOD AND DRINK.

Thirty-three samples of *flour*, thirty-two of *bread*, twelve each of *sugar confectionery* and *ale*, seven of *granulated white sugar*, four each of *lard* and *cheese*, and two of *oatmeal* were all found to be genuine.

II.—SAMPLES OF DRUGS.

The following table gives a list of the drugs analysed last year, classified as genuine and adulterated.

TABLE R.—SAMPLE OF DRUGS.

	No. of Samples Analysed.	No. found to be Genuine.	No. found to be Adulterated.
Camphorated Oil ...	32	22	10
Almond Oil	20	17	3
Saffron	12	12	0
Compound Tincture of Rhubarb	11	8	3
Sweet Spirits of Nitre ...	10	7	3
Total	85	66	19

Nineteen of the eighty-five samples of drugs examined, or 22 per cent., were found to be adulterated. Fifty-six of them were bought from persons whose names are on the official register of Chemists and Druggists ; of these, eight samples, or 14 per cent., were condemned. Twenty-nine samples were bought from unqualified persons ; of these, eleven samples, or 38 per cent., were adulterated.

TABLE S.—DRUGS.

Years.	Number of Samples.	Percentage of Adulteration.	Cautions.	Prosecutions.	Fines.
					£ s. d.
1873-81	79	23	0	0	—
1882-86	76	29	7	0	—
1887-91	443	15	13	7	16 0 0
1892-96	517	23	60	25	28 5 0
1894	148	20	10	8	15 0 0
1895	75	23	9	8	3 5 0
1896	67	24*	13	3	—
1897	108	19	7	4	11 1 0
1898	27	26	2	4	1 15 0
1899	85	22	6	12	25 0 0

* 3 per cent. of the samples were adulterated with preservatives only.

The percentage of adulteration in 1899 was very similar to that of recent years, and about twice as high as that found in England and Wales generally, the reason probably being that in Birmingham as a rule, only those articles are purchased which previous experience has shown are likely to be adulterated. The amount of the fines was much greater than that paid in any previous year.

CAMPHORATED OIL.

Ten of the thirty-two samples analysed (or 31 per cent.) were found to be adulterated, a proportion very similar to that found in 1897, when 27 per cent. of the samples examined were condemned.

Twenty-two of the samples were prepared with olive oil, and contained about the right proportion of camphor ; four samples were deficient in camphor though olive oil had been used ; two samples were prepared with a cheaper vegetable oil but were not deficient in camphor ; one sample was deficient in camphor and prepared from a foreign vegetable oil ; and the remaining three samples were made from mineral oil, one of them containing a very small amount of camphor. The sale of common lubricating oil scented with camphor is a cruel fraud, as the medicinal properties of such a preparation are very slight.

The following list shows the action taken with regard to the adulterated samples.

NO.	DATE.	ADULTERATION.	ACTION.
388—	April 28th	Foreign oil 74%	Fined £5 and 8s. costs.
403—	May 4th	Mineral oil 80%	Fined £3 and 9s. costs.
406—	" 4th	Mineral oil 86%	Fined £3 and 9s. costs.
407—	" 4th	Foreign oil 78%	Fined £3 and 9s. costs.
415—	" 6th	Camphor deficient 10%	Cautioned.
418—	" 6th	Mineral oil at least 99%	Fined £3 and 9s. costs.
965—	Nov. 10th	Camphor deficient 34%	Fined £2 and 9s. costs.
968—	" 10th	Camphor deficient 76%	Fined £1 and 9s. costs.
969—	" 10th	Foreign oil at least 50%, camphor deficient 13%	Fined £2 and 11s. costs.
997—	" 18th	Camphor deficient 13%	Fined £1 and 9s. costs.

Almond Oil.

Three samples of almond oil out of the twenty examined were certified to be adulterated as follows:—

NO.	DATE.	ADULTERATION.	ACTION.
518—	June 3rd	"Peach-kernel oil" about 75%	Fined £1 and 8s. costs.
522—	" 3rd	"Peach-kernel oil" about 50%	Fined £1 and 8s. costs.
524—	" 3rd	"Peach-kernel oil" 100%	Prosecution withdrawn, owing to a technical error in the wording of the certificate.

Saffron.

The twelve samples received were of satisfactory quality; they contained from 6·9 to 7·7 per cent. of moisture, and from 4·6 to 6·6 per cent. of mineral matter. This is a great improvement on previous results, for in the years 1889-94 seven of the thirty-five samples received were found to be more or less adulterated.

Compound Tincture of Rhubarb.

The British Pharmacopœia of 1898 orders one volume of glycerine to be present in every ten volumes of this tincture. Eight of the eleven samples were correctly prepared, or nearly so. The other three contained no glycerine, and agreed with the composition ordered by the 1885 Pharmacopœia. The vendors were cautioned by the Health Sub-Committee.

Sweet Spirit of Nitre.

Three of the ten samples were deficient of 10 to 24 per cent. of the minimum amount of ethyl nitrite required to be present by the British Pharmacopœia. The vendors were cautioned by the Health Sub-Committee. Eight out of thirty-two samples examined during the previous five years were found to be adulterated, while twenty-two per cent. of the samples examined in England and Wales during 1898 were condemned.

III.—LEGAL PROCEEDINGS.

Your Committee cautioned the vendors of adulterated articles in nine cases, and prosecuted in 105 others. In 88 instances fines were inflicted by the Magistrates, five persons were ordered to pay the costs of prosecution only, nine cases were withdrawn generally because the vendor had been fined at the same time for another adulterated sample, and three cases were dismissed on the production of a guarantee.

The following Table shows what articles were found to be adulterated, with the proceedings taken, and the amount of the fines inflicted.

Table T.—Legal Proceedings.

Articles.	Adulterated.	Cautioned.	Fined.	Amount of Fines.		
				£	s.	d.
Milk	104	1	40	108	1	0
Skimmed Milk... ...	1	0	1	2	0	0
Separated Milk ...	1	0	1	2	0	0
Butter	98	0	19	68	0	0
Margarine	7	0	6	29	0	0
Coffee	12	1	9	16	5	0
Demerara Sugar ...	1	0	1	1	0	0
White Pepper	1*	0	0	—		
Malt Vinegar	1	0	0	—		
Camphorated Oil ...	10	1	9	23	0	0
Almond Oil	3	0	2	2	0	0
Compound Tincture of Rhubarb	3	3	0	—		
Sweet Spirit of Nitre...	3	3	0	—		
Total	245	9	88†	£251	6	0‡

* Private purchaser.
† Five other venders were ordered to pay the costs of prosecution only.
‡ The cost of the prosecutions amounted to £45 16s.

The amount of the fines was smaller than in 1898, when £269 18s. 6d. was paid; this included several cases in which the fine was £20, while the highest fine last year was one of £15.

Table U.—Amount of Fines.

FINE.	NUMBER OF CASES.	
	1898.	1899.
£20	3	0
£15	0	1
£10	4	6
£5	17	18
£3	13	8
£2	11	20
£1	17	15
10s.	7	10
5s.	13	9
2s. 6d.	1	0
1s.	1	1
Total	87	88

The subjoined Table gives particulars of the legal proceedings taken in previous years. The large increase in the number of offences in 1886 is due to the inclusion, for the first time, of samples of milk and butter adulterated with preservatives.

The average fine last year was £2 17s. 1d.; with one exception, this was decidedly higher than in any previous year.

TABLE V.—LEGAL PROCEEDINGS.

Year.	Number per Annum.				Fines.	
	Offences.	Cautions.	Prosecutions	Fines.	Per Annum.	Average.
					£ s. d.	£ s. d.
1873–76	39	2	14	12	8 16 3	0 14 8
1877–81	45	3	18	16	22 19 0	1 8 0
1882–86	100	31	35	30	30 7 1	1 0 0
1887–91	108	25	35	30	53 6 5	1 15 6
1892–96	151	48	72	63	110 9 6	1 15 0
1894	124	27	68	62	120 6 0	1 18 10
1895	131	31	86	75	124 18 6	1 13 4
1896	233	83	101	91	209 18 0	2 6 1
1897	284	39	126	119	257 17 0	2 3 4
1898	225	32	97	87	269 18 6	3 2 1
1899	245	9	105	88	251 6 0	2 17 1

IV.—LEGISLATION.

The new Act of Parliament passed on August 9th. entitled the "Sale of Food and Drugs Act, 1899," came into force at the beginning of this year. I consider it advisable to point out some of the more important of the alterations in the law made by this Act which will affect the work of your Committee.

SECTION 4 gives power to the Board of Agriculture to fix limits for the composition of milk, condensed milk, cream, butter, and cheese. Samples falling below these limits are to be presumed to be adulterated until the contrary is proved, and Public Analysts must consider these regulations in certifying samples submitted to them for analysis. A Departmental Committee has been appointed, and is now taking evidence to enable them to fix a standard for milk.

SECTION 5 requires that all compounds made in imitation of cheese shall be called "Margarine-cheese," and marked, consigned, and sold under the same restrictions as are directed by this Act and the Margarine Act for margarine.

SECTION 6 enacts that packages containing margarine or margarine-cheese shall be marked or branded on the package itself, and not on a removable label, &c.; also that paper wrappers containing margarine shall have no other printed matter than the word "Margarine," and that this word must be in letters half an inch long, instead of letters a quarter of an inch square, as directed by the Margarine Act. The same regulations apply to the wrappers used for margarine-cheese.

Section 7 requires that the owner, or occupier, of all premises which are used for the business of a manufacturer, or wholesale dealer, in margarine or margarine-cheese shall register the premises with the local authority. Each manufacturer and wholesale dealer must keep a register showing the quantity and destination of each consignment of margarine and margarine-cheese sent out from his premises. Power is given to officers of the Board of Agriculture to examine this register, to inspect any process of manufacture, and to take samples for analysis.

Section 8 prohibits the manufacture, importation or sale of any margarine, the fat of which contains more than 10 per cent. of butter fat.

Section 9 orders every vehicle or can used for the sale of milk or cream in the streets to have the owner's name and address conspicuously inscribed on it.

Section 11 requires that condensed separated or skimmed milk shall be labelled in large and legible type, "Machine-skimmed milk," or "Skimmed milk," as the case may be.

Section 12 specifies that the labels put on mixtures, such as coffee and chicory, shall not be obscured by other printed matter.

Section 14 gives power to Inspectors, with the consent of the purchaser or consignee, to take samples of foods in the course of delivery in the same way as samples of milk can now be taken.

Section 16 gives power to Magistrates to inflict fines varying from £20 to £100 for obstructing or attempting to bribe a Food and Drugs Inspector.

Section 17 raises the maximum fine for second offences from £20 to £50, and for subsequent offences to £100, with power, in certain cases, to imprison for a period not exceeding three months.

Section 19 prohibits the institution of prosecutions after the expiration of twenty-eight days from the time of the purchase of the adulterated article. The summons must not be made returnable in less than fourteen days from the day on which it is served, and must be accompanied by a copy of the Public Analyst's certificate.

Section 26 enlarges the legal definition of "food," so that it shall include flavouring matters and condiments, and such articles as baking powder.

I remain,
Mr. Chairman and Gentlemen,
Your obedient Servant,
ALFRED HILL, M.D., F.I.C.,
City Analyst.

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